



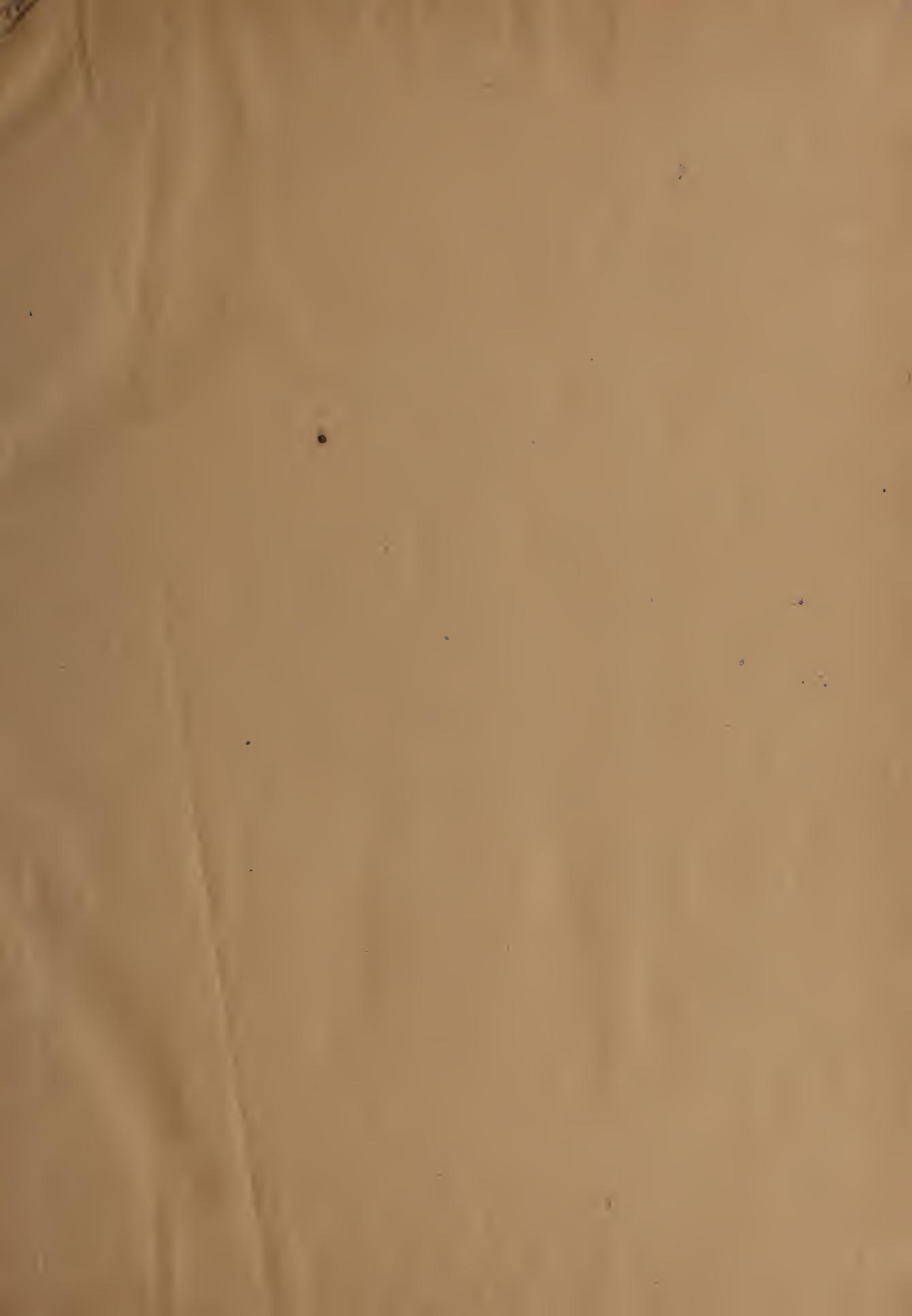
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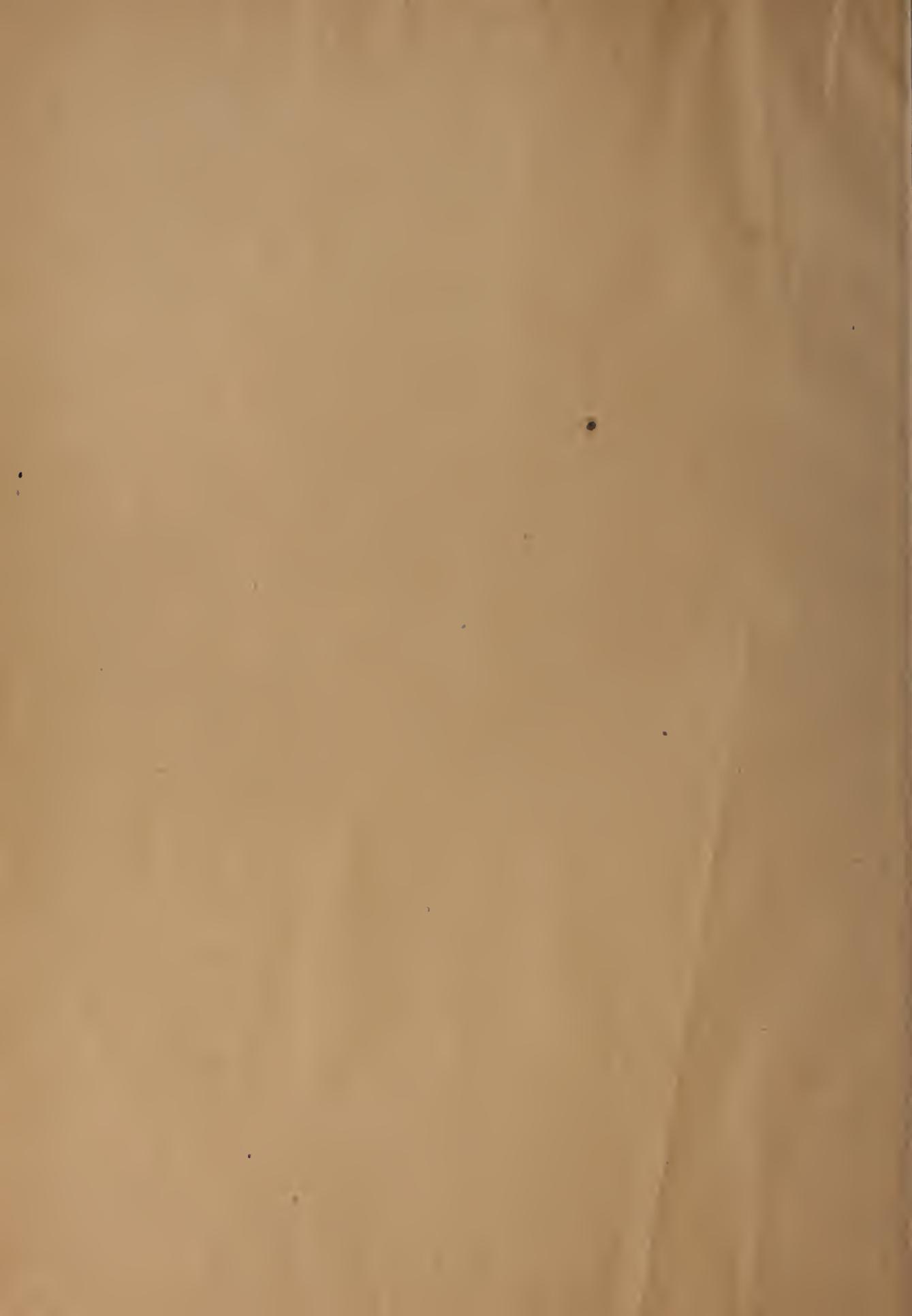


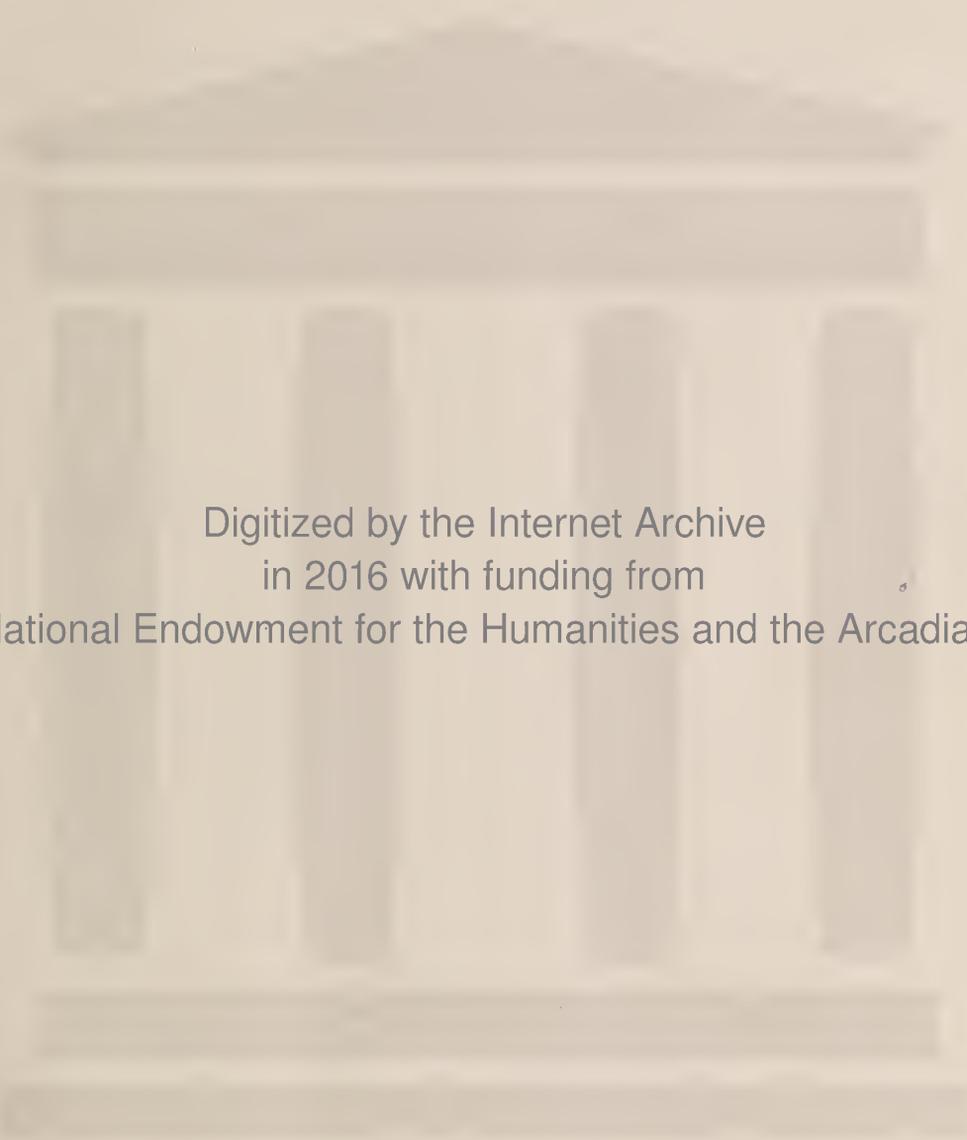
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## ADDRESS

### THE FUTURE OF OPHTHALMOLOGY\*

FREDERICK A. KIEHLE, B.A., M.D.  
PORTLAND, ORE.

The Pacific Coast Oto-Ophthalmological Society is now assembled in its twelfth annual session. Its growth and progress through the last few years is well known to most of you. The statement of its earlier history has been revised and will appear in brief form in the forthcoming Transactions.

As an organization it has now a well established individuality. In business parlance it is "a going concern." It is a strong cohesive force that holds firmly in its bond of fellowship the men of allied interests in this great West, and that stimulates them to greater and better professional endeavor. Personally, I should dislike to see this Society lose its identity by merging with any other similar organization.

Our membership now numbers 300. A recent effort has been made to cull over the lists and to obtain for membership every desirable man doing special work in this vast territory. Yet mere numbers must not satisfy us. If we are to stand on equal footing with similar organizations in the East, we must require similar entrance qualifications. The time has gone by when a six weeks attendance on postgraduate clinics, coupled with

the embellishing handiwork of printer and sign painter, can create specialists in any line. Membership carries with it the stamp of approval of the organization, which thereby, to a degree, vouches for a man's professional attainments and standing, and says to the public, "Here is one in whose ability you may place confidence. Here is a worthy exponent of our art."

With these facts in mind I beg to call to your attention the following recommendation made in 1920 by your then President, Dr. Wilson Johnston, who in his opening address said, "In line with the American Ophthalmological Society and the American Academy of Ophthalmology and Oto-laryngology, it would be advisable for this Society to decide upon a date after which it will require of all its new members practicing ophthalmology either a degree in that branch or a certificate from the American Board of Ophthalmic Examiners." The Academy has now also made provision for similar examinations in Oto-laryngology.

It would seem that the time is now ripe for our adoption of this excellent suggestion. Therefore, I urge upon you consideration of an amendment to our by-laws requiring such certification for all new members in this Society after January 1, 1926.

Both as citizens and as ophthalmologists and otolaryngologists we are likewise deeply interested in

\*President's address. Read before the Twelfth Annual Meeting of Pacific Coast Oto-Ophthalmological Society, Portland, Ore., July 10-12, 1924.

the maintenance of the highest possible standards of secondary and university education throughout the land. Thorough medical training demands a proper background. A recent sojourn abroad has impressed the writer anew with the superior methods of preliminary education in vogue in Europe. Six years in an English preparatory school, a French lycée, or a German gymnasium, gives a young man an enviable foundation for any line of study he may later choose to pursue. The curriculum comprises serious, solid subjects that require mental alertness and develop capacity for sustained thinking.

Two tendencies have all but ruined the corresponding years of education here in America. First, vocational training, with its multifarious fads and fancies and its elaborate effort to make work out of what is ordinarily play; and, second, the elective system run wild, wherein even in high school years youths with no serious purpose, bent or outlook are permitted to choose almost haphazard their own courses or study. Naturally, with the abandonment of youth, they select the politely cultural or mildly utilitarian, so-called "snap courses," in preference to the thought-inducing, energy-provoking subjects that make for the even training of a well rounded mind. One hopes he can see approaching the day of return to sanity, when schools will resume their rightful responsibility in the matter of directing boys and girls toward studies that evoke mental vigor.

So much for elementary and premedical education. Our better medical schools compare favorably with Europe's best. In postgraduate training, however, one envies the European student the atmosphere of earnest scientific research and of speculation, in which he may after graduation immerse himself, totally suppressing all other interests and activities. He enters almost the life of the cloister.

By reason perhaps of the similarity of this intensive training demanded of specialists, a visitor acquires a feeling of the uniformity of practice in ophthalmology and otology the world over. A certain general similarity in procedure makes one feel at home in a clinic, be it London, Vienna, Rome, Madrid or Amsterdam. For this sense of fellowship we may thank the master minds of our profession, who by tireless labor and inspiring influence, through scientific journals and International Congresses, keep alive the fires of scientific enthusiasm. We speak a common language despite our different tongues. A reference to the names

of Fuchs, Parsons, Weeks, Barraquer, Smith, Morax, LeGrange, Politzer, LeMaitre, DeSchweinitz or a score of others is at once understood. They are masters who have helped our sciences maintain their best traditions, and to climb to new levels of effectiveness.

But with what fresh problems may the ophthalmology of the future be concerned? Certain tendencies in modern life may well create apprehension as to the ability of the human eye to withstand the constantly increasing demands upon it. We may shudder at the picture of the youthful Lincoln reading his Aesop and his Bunyan by the light of the flaring pine knot, but as society was then constituted, daily life required comparatively little ocular energy. We are guilty of far greater offenses towards our eyes from the hours spent in kindergarten through school and college and all the aftercoming years of life. Our entire educational scheme is based upon the acquisition of concepts through visual paths.

Attention cannot well be fixed without looking in the direction of the sound. The average individual must needs see a word before deciding whether it is spelled correctly, must see a Latin or a French phrase before attempting to translate it. If he hears a foreign phrase he finds himself visualizing it in printed or written form. Visual images comprise the great part of the contents of our minds. It is for the psychologists to say why the visual centers are so much more amenable to training than their auditory brethren, and why attention and concentration function more actively when aided by sight. Here, too, is a problem to test the mettle of otology, the development of a system of education that shall make at least equal demands upon the auditory channels, requiring that they bear an increased share of responsibility, and bringing about a corresponding relief for the now overtaxed visual tracts.

We cannot surmise what new demands the approaching decade, not to say centuries, may make upon the human ocular apparatus. We can only conjecture by glancing at the past. We note the tremendously increased necessity for instantaneous muscular and accommodative adjustment made imperative by the excessively rapid locomotion of the day. The temptation to sustained use of our eyes is continuous during all our waking hours. The inviting sign-boards, the street car advertising cards, the display windows that beckon so enticingly, the dazzling electric signs, the incessant lure

of the movies, all make for ocular weariness. Neither can we overlook the factor of the abandonment of healthful country life and the concentration of population in the cities, with attendant increased number of sedentary and mechanical occupations, all requiring close visual application.

Ten thousand objects unknown to our boyhood are today staple articles of commerce, all from the hands of skilled mechanics through long hours of close application. The chemist, close-housed, now produces in his laboratory a thousand substances to procure which men formerly sailed the seven seas. Modern life is yearly more complex and more replete in conditions that provoke retinal fatigue. What will come of this increased close application and intensified ocular strain?

Asthenopic patients generally fail to understand the factor of their physical limitations; they realize reluctantly, for example, that even a perfect correction of refractive error neither warrants indiscriminate and indiscreet use of the eyes, nor bestows unlimited muscular and accommodative power. The factor of individual capacity must not be overlooked. In our consultations do we emphasize this sufficiently, or study with enough care the particular requirements of the patient's occupation or profession? A recent writer remarks, "The healing art of the physician can be effective only up to the limit of stress of the human machine to which it is applied." Thus the patient often overlooks an important element in the analysis of his trouble and may be greatly helped by the reminder that his ocular apparatus is but part and parcel of his nervous system, that his eye both embryologically and physiologically is an offshoot from his brain and functions from it, and that it fatigues with the onset of nervous exhaustion. An excellent ophthalmic motto for workers who pore over bench or desk, parodying the warning in your hotel rooms, is this: "Stop! Have you anything left?"

Our profession is badly named. The terms "medicine" and "practice of medicine" are unfortunate relics of an evolutionary and rather unsavory past. As "doctors of medicine" we are inevitably linked in the lay mind with drugs and drugging. Yet who of you could pass an examination on the materia medica and therapeutics of your student days? Within the profession it is common knowledge that, apart from a few narcotics, sedatives and stimulants to quiet nature or to arouse her to renewed activity, we are absolutely independent of materia medica. Yet the public, still

eager to grasp in its hand a tangible prescription or a tonic, has been slow to realize that for nauseous drugs we have substituted surgery, the x-ray, radium, massage, rest, suggestion, serums, immunization, and all accepted bids in combatting disease.

The healing art, unfettered by the past, adopts the new, if helpful, abandons the old, if useless, and extends a welcoming hand to all proved means of bringing aid to the *vis medicatrix naturae*. Thus she arises superior to the puerilities of "electron systems," to the immature conceptions of osteopath and "chiropractic," and to the "pitiful attempts at philosophizing" of christian science and kindred cults. To such transient systems and superficial seekers after scientific truth, she recalls an old Arabian fable:

A Palm Tree stood in the desert, venerable, lofty and majestic. A summer Gourd sprang up at its base, climbing daily higher and higher, 'til it mingled its leaves with the gracefully waving branches of the Palm. "How old art thou?" asked the Gourd. "Two thousand years," replied the Palm. "What?" exclaimed the Gourd. "Two thousand years and no higher! Only see, I have climbed as tall as thou in a single summer!" "Yes," replied the Palm, "each summer for twenty centuries have I seen a Gourd like thee spring up at my feet and climb as thou hast climbed, and each autumn have I seen it wither and die, even as thou in a few short days wilt wither and die."

This is the parable of medicine, the healing art, and of her defamers, her detractors, and her emulators. Be assured that the great body of intelligent people, with innate capacity for rightly estimating standards of value, still respects the profession of medicine, still bows to her dignity, and upon her and upon no cult throws heavily the weight of responsibility for the public health. Whatever the demands of the changing years, we remain confident in the assurance that an earnest company of workers will meet fearlessly these fresh problems as they arise.

In closing, let me express to you on behalf of the Portland men our great satisfaction and our real pleasure in seeing you here. Please consider this a personal welcome from each of us to each of you. We have but one desire and that is to make you feel at home, without however, imposing upon you any of the cares and responsibilities that adhere to one's being at home. I can assure you of our friendly feelings toward you all and of the sincerity of the welcome we now extend you.

## ORIGINAL CONTRIBUTIONS

### RETROBULBAR NEURITIS\*

SIR JOHN HERBERT PARSONS, F.R.S., C.B.E.

LONDON, ENGLAND

Retrobulbar or retroocular neuritis is the term applied to inflammation of the optic nerve behind the eyeball. It is characterized by rapid deterioration of vision with no obvious local cause and especially no definite ophthalmoscopic signs of disease.

The patient complains of rapidly increasing defect of vision in one eye. Central vision is always involved first, but the obscuration rapidly extends peripherally, until in one to eight days there is nearly or quite complete blindness on the affected side. Occasionally the other eye succumbs to the same condition, after a short, or sometimes, quite long interval; and relapses are not uncommon. In many cases pain is experienced on moving the eye, and it is elicited or increased by pressure upon the globe. Neuralgia and headache may be present, but there is often little sign of constitutional disturbance. Ophthalmoscopic examination will probably reveal a perfectly normal fundus.

We are, therefore, confronted with a condition in which subjective symptoms play a preponderant part, and it is, therefore, very easy to overlook the disease and to attribute the symptoms to hysteria. Extreme amblyopia is often present in persons who in youth have suffered from concomitant strabismus, and in whom the faulty deviation of the eye has disappeared or been corrected. This source of error in diagnosis should be removed by a careful investigation of the history.

There is, however, one objective sign of the greatest value in discriminating between organic disease of the optic nerve and neurosis. If the pupil reactions are examined, they will be generally found apparently normal, both directly and consensually to light, as well as on accommodation and convergence. More minute inspection, however, will show that though the pupil of the affected eye responds to light, the contraction is not maintained even if the bright illumination is continued. Under normal circumstances the pupil contracts briskly, oscillates for a short time, and then remains definitely constricted as long as the light stimulus is applied. In retrobulbar neuritis the oscillations are much more obvious and continue for a longer time, whilst each oscillation leaves

the pupil slightly more dilated, so that ultimately the pupil may be as large as before the application of the stimulus, in spite of the continuance of its application.

This lack of sustained constriction of the pupil to light is not limited to cases of retrobulbar neuritis. It can be observed in any case in which there is interference with the conductivity of the optic nerve fibres without absolute block of the impulse. Thus it occurs in cases of retinitis and choroiditis, in which the nerve fibre layer of the retina is extensively involved in exudations, etc. This fact does not, however, detract from the value of the reaction as a diagnostic sign of retrobulbar neuritis, for in other cases there are usually manifest objective signs of gross disease. When the reaction is indisputably present, it definitely eliminates the question of purely functional disorder.

Among the subjective symptoms the presence of a central scotoma is by far the most important. I am of opinion that far too much value is often attached to minute details of the fields of vision. Patients are by no means always very intelligent, nor is it easy even for the most intelligent immovably to fix the center of the perimeter arc whilst focussing attention upon peripheral portions of the field of vision. But the demonstration of defects near the centre of the field offer least difficulty, and should give concordant results in repeated examinations.

In retrobulbar neuritis the central scotoma may be merely relative, commencing with failure to distinguish small red and green objects, or it may be absolute. Opportunity seldom arises for observing the early relative stages. More frequently the central defect is large and absolute. Sometimes the scotoma appears to be not quite central, and paracentral, ring, and sectorial scotoma are observed. They probably represent a later stage of the visual defect, and, indeed, Rönne has described a shifting of the scotoma at different periods in the course of the disease. Extension of the obscuration peripherally may lead to complete blindness, but in most cases the prognosis is good and complete recovery ensues.

Central scotoma is due to impairment or destruction of the foveal and macular region of the retina or of the axons of the ganglion cells of this portion of the retina. The area centralis of the mammalian retina is phylogenetically the latest, and functionally the most highly differentiated part of the retina. Now, it is a well-established law of neur-

\*Read before the Twelfth Annual Meeting of Pacific Coast Oto-Ophthalmological Society, Portland, Ore., July 10-12, 1924.

ology that the most highly differentiated structures are relatively the most vulnerable, and succumb most readily to the depressant effects of deleterious agencies. The macular region is no exception to the rule, which in this case, at any rate, seems to apply not only to the ganglion cells themselves, but also to the fibres which originated from them.

The so-called papillomacular bundle of fibres, which pass from the macular ganglion cells to the optic nerve, have a well-defined distribution both in the retina and in the optic nerve. Their course in the optic nerve has been placed beyond dispute both by experimental and pathologic investigations.

Some years ago I traced the degenerations in the optic nerve resulting from lesions of different parts of the retina in monkeys. The results confirmed some previous observations by Usher and Dean, and were further confirmed by them in a later paper. A lesion situated between the macula and the disc, thus severing many of the papillomacular fibres, produced degeneration of the optic nerve fibres, as shown by the Marchi method. The degenerated fibres occupied a triangular area on the temporal side of the nerve immediately behind the eyeball. Farther back in the nerve they became grouped in a circular central area. Still farther back, when approaching the chiasma, the area was elliptical, with the long axis horizontal.

Degeneration of these fibres had previously been demonstrated in pathologic cases, notably by Nettleship and Edmunds in a diabetic who smoked heavily and by de Schweinitz and others in tobacco amblyopia. As you are well aware, a relative central scotoma for red and green is a characteristic feature of poisoning by tobacco, alcohol and other drugs, such as stramonium, cannabis indica, carbon disulphide, nitrobenzol, etc. The degeneration found in such of these cases as were examined are distributed as in the experimental lesions.

So striking was the presence of a central scotoma in the toxic amblyopias that they were described as cases of chronic retrobulbar neuritis. There is experimental evidence, notably that aduced by Birch-Hirschfeld, to show that in these toxic cases the ganglion cells of the retina suffer severely, as proved by changes in the Nissel granules of the cells. These changes are not limited to the macular region, but are more pronounced there, and more readily lead to death of the cells there, thus showing the greater vulnerability of

these specially differentiated cells. It is, therefore, probable that tobacco and other toxic amblyopias are really due to primary degeneration of the retinal cells, and that the changes in the optic nerves are due to secondary degeneration of their axons. It is quite possible that some cases of acute retrobulbar neuritis, due to general toxic agencies, such as "rheumatism" (which is itself probably due to septic absorption), spesis from dental, nasal, intestinal and other sources, menstrual disturbances, diabetes, gout, influenza, syphilis, and so on, may be due to primary involvement of the ganglion cells from which the papillomacular fibres are derived.

That they are not all due to this cause, however, is shown by cases in which the characteristic symptoms are the early manifestations of an orbital cellulitis. This may originate in the nasal sinuses, the periosteum, especially in the vicinity of the optic foramen, from foci in the mouth or face, transmitted along the pterygoid plexus of veins or the angular vein respectively, or from syphilitic or tuberculous deposits in the orbit.

Such cases demonstrate the peculiar vulnerability of the papillomacular fibres. In spite of their protected position in the centre of the nerve in the middle and posterior parts of its orbital course, they are the first to suffer, as shown by the central scotoma. In these cases the prognosis is by no means so good as in the milder cases—so-called "idiopathic" cases—of acute retrobulbar neuritis. Unless the acute inflammatory process in the orbit be promptly stayed by appropriate treatment the destruction of the nerve fibres inevitably follows, and involves not only the papillomacular fibres, but the whole nerve, and complete optic atrophy follows.

The optic nerve fibres as a whole, indeed, appear to be exceptionally vulnerable, even as compared with similar afferent nerve tracts within the central nervous system, for it is to be remembered that the so-called optic nerve is really not a "nerve" but a tract of the central nervous system. According to the ordinary laws of Wallerian degeneration the nerve fibres degenerate only in the direction away from their cell-station. In the case of the optic nerve most of the fibres are axons of the ganglion cells of the retina, and should, therefore, degenerate only in the centripetal direction towards the brain. It is found, however, that if their course is interrupted by section—whether traumatic or inflammatory—they degenerate both towards the brain

and towards the eye. This anti-Wallerian degeneration can be produced in other less vulnerable nerve tracts by exceptionally violent lesions. In all cases, when a nerve fibre is cut, pathologic changes occur in the cell of origin, as shown by breaking up of the Nissl granules. But in most cases the cell is capable of recovery, and the nerve degenerates only centrifugal to the lesion. If, however, for example, the hypoglossal nerve is forcibly torn away, the cells fail to recover, and the whole nerve degenerates. This is the normal result with any lesion of the optic nerve which severs the continuity of the fibres.

A not uncommon cause of acute retrobulbar neuritis is disseminated sclerosis, and these cases are particularly interesting, both as demonstrating the vulnerability of the papillomacular fibres, and also as showing the difference in effect of a lesion which attacks the medullary sheaths of the nerve-fibres, leaving the axis cylinders relatively intact, as compared with a truly neuronie lesion, such as occurs in tabes. Lesions in the visual paths occur in about 50 per cent of cases of disseminated sclerosis, and the lower visual tracts—optic nerves, chiasma, and optic tracts are often involved. As is well-known, these lesions attack especially the medullary sheaths, leaving the axis cylinders more or less normal, as shown, e.g., by their staining well by Bielschowsky's method. In the optic nerve, even with an extensive lesion, the papillomacular fibres are earliest and most affected, so that the first symptom is a central scotoma. Now, it is often a matter of considerable difficulty to diagnose between disseminated sclerosis and a purely functional condition, and both are frequently combined. Hence the demonstration of a true retrobulbar neuritis, as shown by the lack of sustained reaction of the pupil to light, may be of the greatest service.

Though a certain amount of optic atrophy usually follows the neuritis of multiple sclerosis, it practically never causes complete blindness. Many axis cylinders escape destruction, and though their conductivity is impaired by the destruction of their insulating medullary sheaths, they are still capable of transmitting visual impulses. In tabes, whatever be the exact seat and cause of the lesion—and this is a much disputed point—it is undoubtedly a truly neuronie lesion, in which the cells and nerve fibres themselves suffer and are eventually destroyed, thus leading inevitably in time to total loss of vision.

These more severe cases of local lesion, giving rise primarily to the symptoms of acute retrobulbar neu-

ritis, may show relatively early ophthalmoscopic signs and generally exhibit such signs at a late stage. Thus, both in orbital inflammatory conditions and in disseminated sclerosis, there may be signs of optic neuritis, but they are usually slight. They occur especially when the lesion affects the nerve near its entrance into the eyeball. There is then slight blurring of the edges of the disc, slight swelling of the disc, and some engorgement of the veins. There are not usually many hemorrhages on the disc, and there is only scanty exudation.

In the later stages there is in the milder cases some increased pallor of the temporal side of the disc, due to atrophy of the papillomacular fibres. I do not think any importance can be attached to this as a diagnostic sign unless it is definitely more marked on the affected side. The color of the disc varies so much within normal limits, and the normal disc so often shows the pallor on the temporal side, that only comparative estimates of the two sides have diagnostic significance, unless the change is very pronounced. It should be remembered that the pallor of an atrophic disc is due to the obliteration of capillaries, and not to the actual atrophy of the nerve fibres. Of course, in the postneuritic cases, i.e., cases in which there has been definite papillitis, the pallor is contributed to by the presence of newly formed connective tissues. A disc may look chalky white, and yet there may be quite good vision and a good field. The disc never looks as white in the atrophy following a disseminated sclerosis as it does in a tabetic atrophy, but it may be chalky white and completely atrophic after an orbital cellulitis.

The development of pallor of the disc resembles that following rupture of the optic nerve in the optic foramen, such as not infrequently follows fracture of the base of the skull. In these cases the pallor is not usually unmistakable until at least two or three weeks after the origin of the lesion.

With regard to disseminated sclerosis it may be mentioned that Uhthoff found marked optic atrophy in 3 per cent, incomplete atrophy in 19 per cent, temporal pallor of the disc in 18 per cent, and optic neuritis in 5 per cent of all cases. The optic nerves are affected, therefore, much more commonly than in tabes, more often indeed than in any other disease of the nervous system except cerebral tumour.

It should be remembered that in ordinary retrobulbar neuritis the central scotoma is usually absolute or relative for colors. In toxic amblyopia the scotoma is practically always bilateral;

in disseminated sclerosis it is unilateral in about half the cases. In ordinary retrobulbar neuritis it is nearly always unilateral, and to these cases the early stages of disease of the pituitary gland (*vide infra*) must be added. Some cases can only be definitely diagnosed by the history and by the development of other pathognomonic signs. With regard to tabes central scotoma is rare, and, on the other hand, symmetrical concentric contraction of the field is rare in disseminated sclerosis. Moreover, the failure of vision is steadily progressive in tabes, and is bilateral; in disseminated sclerosis it is unilateral and very variable. The diagnosis from hysteria may be difficult, but the regular concentric contraction of the field so often found in this condition scarcely ever occurs in disseminated sclerosis.

A vast amount of literature has been written on disease of the nasal sinuses as a cause of retrobulbar neuritis. Of course there is no question about the great proximity of these sinuses, especially the sphenoidal sinus, to the optic nerve; nor is there any doubt that cases of retrobulbar neuritis do occur on the result of empyema of nasal sinuses. But I feel sure myself that this is a much overrated cause of the disease. For one case in which the relationship is proved there are probably thirty or forty in which the association is purely conjectural. Fortunately the cases usually get well, but many of them would have done so without mutilation of turbinate bones and other painful intranasal operations.

That pressure alone on the optic nerve or chiasma suffices to produce the symptoms of retrobulbar neuritis, especially the unilateral central scotoma, was first shown by Nettleship. Tumors or cysts of the pituitary body are seldom symmetrical; hence they press more upon one side of the chiasma or optic tract than the other. The earliest ocular symptom of such pressure, seldom observed, is a central scotoma, or, as may be made out in some cases, a small temporal paramacular scotoma. Such a scotoma, unilateral, and persisting almost unchanged for a considerable time, should lead to the suspicion of a pituitary growth and to appropriate skiagraphic and other investigation. In these cases the defect gradually increases, involving first the temporal side of the field, and in due course passing into the typical bilateral hemianopia. Pressure by tumors or abscesses of the frontal lobe may produce a similar result; in such cases there is usually papilledema of the opposite side.

A curious and very interesting cognate affection

of the retrobulbar portion of the lower optic paths is hereditary optic neuritis, or Leber's disease. This disease usually commences at about the twentieth year of life and affects several members of the same family. Descent is usually through an unaffected female to the male, though females are also sometimes affected. Vision generally fails rapidly at first, then gradually, then remains stationary or gradually improves. Both eyes are always affected, though one may precede the other by a few days up to eighteen months. In two-thirds of the cases there is a central scotoma, either partial for colors or also for white. The peripheral field is usually normal, but concentric contraction or sector-shaped defects may occur. Total and permanent color-blindness has been known to follow. The central scotoma generally persists, but progressive constriction of the field to complete blindness is rare. Members of the same family often show identical peculiarities in the progress of the cases. The fundus is at first normal or there is slight blurring of the edges of the disc. In later stages, after months, optic atrophy ensues, with pallor confined to the temporal side or involving the whole disc. Apart from headache, migraine, etc., the general health is good. Herbert Fisher has suggested that Leber's disease is due to transitory changes in the pituitary body, resulting in pressure upon the chiasma and associated with the periods of physiologic change in the sexual life.

In many cases of typical retrobulbar neuritis it is probable that the nerve is first attacked in the region of the optic foramen. Marcus Gunn drew an analogy between it and peripheral facial paralysis (Bell's palsy), suggesting that the course of each nerve in a bony canal might account for pressure effects. The facts that both are liable to occur after exposure to cold, and that retrobulbar neuritis may be preceded by peripheral facial palsy of the same or opposite side, lend some support to the theory.

Acute retrobulbar neuritis occurs at all ages, but the typical "idiopathic" form is commonest in young women.

It is unnecessary for me to discuss in detail the investigation of the cause and the lines of treatment of the disease. Clearly in most cases it is a question of finding out the source of toxins, and this often involves a very elaborate investigation of the mouth, nasal sinuses, alimentary and genitourinary systems, etc., as well as the application of various serologic tests, skiagraphic examinations, etc. In many cases

the quest fails, but fortunately most cases get well. When no definite focus can be discovered, mercury, iodides, salicylates and diaphoresis should be used. Smoking should obviously be prohibited, and the use of alcohol restricted. The eyes should be protected from bright light, and all near work abandoned. In diabetic cases the appropriate regime should be instituted.

In conclusion, I trust I have succeeded in showing that even so relatively well-defined a clinical entity as retrobulbar neuritis leads inevitably to the discussion of far-reaching problems of medicine and surgery, and of pathology and even of physiology. We owe it to the insatiable curiosity of the human mind that we are stimulated to travel along what are often tedious paths towards alluring goals.

### GLAUCOMA AND THE FOCAL INFECTIONS\*

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If we look back not so many years ago in the history of glaucoma, we find that the etiology was very vague: high hypermetropia, nervous diathesis and a lot of unsatisfactory theories. Also that incipient glaucoma was not recognized, only the fully established cases, and the prognosis was very grave. Twenty-five or thirty years ago the eye, ear, nose and throat specialist saw a great many more advanced cases of glaucoma, as well as tuberculous laryngitis, also retinitis albuminurica is rarely seen at present, that is, compared to former years.

Today the whole picture is changed. Ophthalmologists are constantly on the lookout for the slightest changes, and the people themselves have become accustomed to consult the ophthalmologist earlier. Preventive medicine has made great strides and publicity has done its work, so that both the profession and the laity are cooperating more thoroughly, though the millenium is not yet.

Patients more frequently consult the oculist for slight deviations from the normal in their visions, blurring, loss of accommodation, etc. The ophthalmologist is also on the watch, taking tension and color fields, and countless cases are discovered in their incipient stages, or at least prevented from even starting.

As the study of the etiology has progressed, I have noticed more and more the tendency toward a more natural view of the case. To my mind, as I have said on a number of occasions, glaucoma

is an expression of a systemic condition. It is a vascular affair, and limiting the treatment to simply the use of miotics or operations is neither fully scientific or rational.

Glaucoma is glaucoma. We may subdivide it under various titles as glaucoma simplex, secondary, absolute, or what not, but these are only various stages. Increased intraocular tension is the essence of the whole affair. We may blame the iris angle, the pectinate ligament, ciliary body, the vortex veins or what not. One or all may be involved. Some come from a chronic iridochoroiditis; that is direct infection and that is one of the varieties. In the main, the vitreous body is the one, when edematous, that pushes the lens, iris and ciliary body forward; but in fact all the tissues of the eye may be involved in the process.

Martin Fischer has proven again and again his theory of the causation of edema, and edema of the colloids of the eye constitutes glaucoma. When freshly oxygenated blood fails in a part, that part becomes edematous just as when there is an embolus or thrombus in the brain, and as the kidney swells, and renal disease is preeminently a cardiovascular disease.

If, then, we grant in our theory that it is primarily a vascular disease, and vascular disease is the result of infection, what then is the rational mode of the prevention and treatment of glaucoma? First, naturally, is the attention to the eye and then of course we turn to the miotics, eserine and pilocarpin. These not only draw the iris out of the narrowed filtration angle, but certainly aid in increasing circulation by their irritation. Dionin is also of considerable use in this regard.

Next, attention to the general condition of the patient—prompt attention to the gastrointestinal tract, for here lies a large field for chronic insidious infection. It is simply to mention what everybody knows—the teeth, tonsils and sinuses. Prompt alkalization of the patient is extremely important, either by the alkaline waters by mouth, or if more urgent, rectal drip by the Murphy method, using Fischer's solution.

Dental sepsis is probably the most prominent of the focal infections, as absorption from the alveolar process is more rapid.

The studies of Charles C. Carlos, of Stuttgart, as reported in the *Klinische Monatsblatt für Augenheilkunde*, as abstracted, gives the results in the examination of 100 cases of glaucoma. In 90 per

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cent he found cardiovascular changes; in 62 per cent, increase of blood pressure. There were 59 per cent of cases aortitis, while 57 patients were syphilitic or suspected.

This without the percentages is the conclusion that Martin Fischer and the writer expressed in 1911 in our first study of glaucoma as an edema.

One of the patients I reported at our meeting in Spokane in 1917, a druggist, then 65 years of age, had had an absolute glaucoma after a two days auto trip. This was brought out as reported by the use of alkalines and miotics. This man had double maxillary, ethmoidal and frontal sinusitis, but I was not allowed to do a radical, only open for drainage. His vision returned to normal; the fields were very little contracted and have remained the same. Vision a few months ago was 20/20 and he has no tension. He uses his eserine and drinks his alkaline waters and will live to a fairly good old age.

One patient recently, a woman past 50, came in with an absolute glaucoma, totally blind in the affected eye and mentally badly upset. She had ten or eleven teeth, all surrounded by pus. These she

had obstinately refused to have extracted. Iridocyclitis resulted, followed by intense tension. Nothing was done then but to remove the teeth and the eye to save trouble with the other eye which was showing the slight signs of beginning trouble. The patient next morning was entirely rational and the remaining eye improved in vision; it had begun to have uneasy symptoms.

I am not reporting a lot of cases but simply give the results of observations of the last few years. All honor to the ophthalmic surgeons who have devised operations for the cure of glaucoma. I said cure. It is a relief only, but if the etiology is disregarded, many though operated on will not be cured. The heated controversies over the various operations and their number tell their own story. The time spent battling over these simply delayed the study of the etiology twenty-five years. If these two sentences cause anyone to think that I am opposed to operations for glaucoma, I wish to disclaim that. But if glaucoma is recognized early, the etiology is established, local and general measures taken, operations will be more seldom performed.

#### Should Be on Alert for Signs of Chronic Tiredness

Fatigue sends out warning signals that should be heeded, but parents and teachers unfortunately often ignore these signals in their children, says Dr. Max Seham of Minneapolis, in an article in the January Hygeia, popular health magazine published by the American Medical Association.

"Chronic fatigue does not manifest itself overnight," Dr. Seham declares. "It is a condition that comes on slowly and in the beginning does not appear as dangerous as it really is. In its desire to protect itself from further damage, the body sends out warning signals."

Some of these warning signals are headaches, general weariness, dark circles under the eyes, dizziness and fainting spells, lack of appetite, sleeplessness, irritability, twitching muscles and lack of enthusiasm.

"If a normal, well behaved, healthy person within six months or so becomes irritable, inattentive and hard to handle, we should suspect fatigue," Dr. Seham states. "The child who won't get up in the morning, dislikes to go to school and does not like to run and play like other children may be suffering from fatigue."

"We have not done all in our power to relieve headaches by having the eyes fitted with glasses. Many persons have been fitted with eyeglasses by some one who treated only the eye and not the whole child. Their eyesight may have been perfect and their headaches due to fatigue."

All these signs are signals of a decrease in mental and physical efficiency and should be heeded.

#### Ethylene in Obstetrics.

In the maternity section of the Presbyterian Hospital, Chicago, N. Sproat Heaney, Chicago (Journal A. M. A., Dec. 27, 1924), has used ethylene and oxygen 215 times during the last year, with very satisfactory results. He says that for operative obstetric work it is without approach among anesthetics, since so many women requiring operative delivery are jeopardized. Ethylene and oxygen is entirely sufficient for every obstetric operation without the addition of ether. It is of particular advantage in the cases of grave operative risk. It is not irritating to the lungs or kidneys. It has no postadministrative effect on the hemoglobin of mother or child. It can be given without asphyxia or jactitation. The patient quickly returns to consciousness. If vomiting occurs, it is usually insignificant and transitory. It does not produce paralyzes of peristalsis, and there is as little post-operative complaint as after local anesthesia. Since using ethylene, Heaney has discarded local anesthesia in all obstetric as well as in gynecologic work. Ethylene is quicker than nitrous oxid, and the patient becomes more rapidly analgesic. No more complaint is made of its odor than that of nitrous oxid. Uterine bleeding is somewhat greater than with nitrous oxid, but is far less than with ether. When given intermittently, as in the conduct of labor, there is a greater chance of explosion than when given continuously, as in surgical work, for there is a greater opportunity of static ignition; first, by the contact of persons in the room with the machine, and then by the striking of one part of the apparatus against another. If ethylene is to be administered, care should be taken that the floors of the operating room are not electrified and that there is a continuous metallic contact from the patient's mask to the machine, and that the machine itself is grounded to a water pipe or radiator. Ethylene is without equal as an anesthetic for operative obstetrics, particularly in grave surgical risks, and it is superior to nitrous oxid in the conduct of normal labor.

## DEMONSTRATION OF A VISUAL FIELD APPARATUS\*

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The desire to chart the full visual fields of an unrestricted eye while stabilized by binocular vision has led us to try out many devices. In applying this idea for use with a certain tangent screen we have attempted to make the screen practicable for routine work. A small conical tube was devised which can be adjusted readily in front of either eye by sliding this tube on a horizontal rod above the forehead. This confines the vision of this eye to a circular area about  $6^\circ$  in diameter. The tube is so constructed that a prism from the ordinary trial lens case may be placed within and rotated to obtain binocular vision. The eye looking through this tube merely acts as a stabilizing eye, leaving the other eye free of all restrictions for determining its full visual field.

When the face is in the rest and the chin-rest is adjusted so that the eyes are on the line with the two fixation points on the curtain, the eye is 55 cm. distant. With both eyes open, one of them looking through the conical tube, a  $12^\circ$  prism is placed in the tube, base out, and rotated so that the fixation points are seen on line. If two points only are seen, then there is fusion; if three points are seen, fusion is not present. It may be necessary to increase the strength of the prism to correct a muscular imbalance. In the great majority of cases fusion is readily obtained with a  $12^\circ$  prism, base out. The eye under examination is now held fixed by its desire to maintain fusion.

The nasal field as well as the temporal field of this unrestricted eye may be determined and charted on the curtain, upon the surface of which has been placed a scale in India ink. The findings may now be photographed and the films filed as a permanent record. The circular area of  $6^\circ$  seen by the stabilizing eye should be charted with the stabilizing eye occluded. Electric illumination is preferred because constant. By using two 250 watt daylight bulbs in two separate reflectors, the illumination is satisfactory, for colors as well as white.†

The following features of this visual field apparatus seem worthy of noting:

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†Two electric light bulbs are now used instead of four, as shown in the illustration.

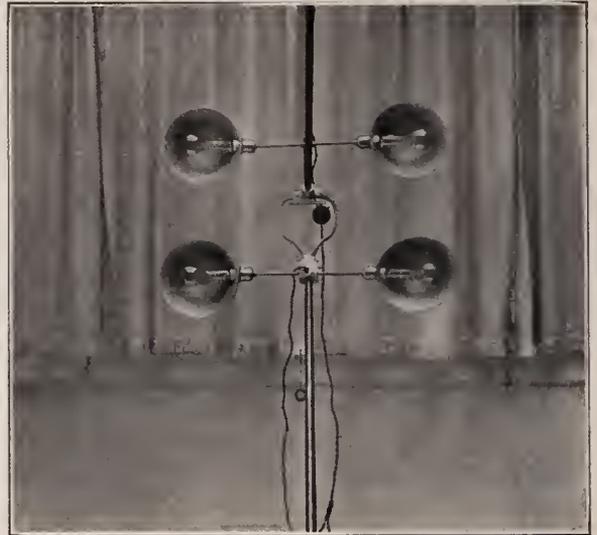


Fig. 1. Front view of Lyster Screen.

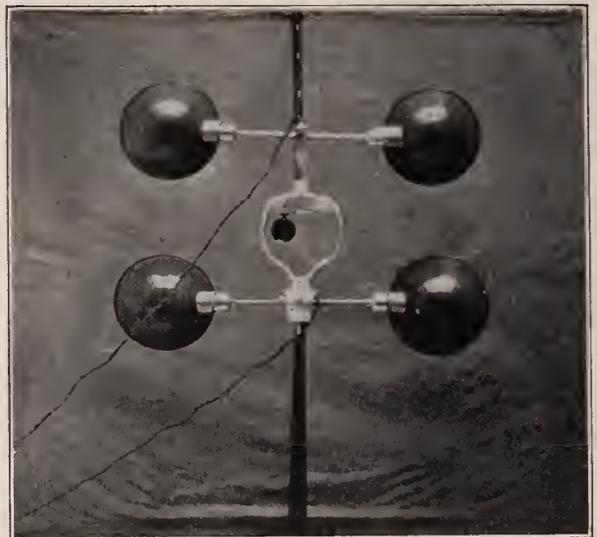


Fig. 2. Screen without curtain, from the rear.

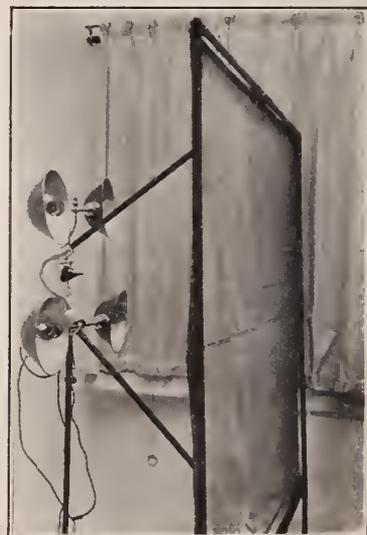


Fig. 3. Angle View of Lyster Screen.



Fig. 4. Stabilizing Test for Binocular Fixation, looking forward.



Fig. 5. Side view of Tube for Binocular Fixation, with Prism.

1. A light take-down portable tubular steel frame.

2. Two gray cotton translucent curtains 180x120 cm., right and left respectively, easily attached and detached from the frame.

3. Two fusion points 5 cm. on each side, horizontally, of the center of the curtain.

4. Two 250 watt electric daylight bulbs with reflectors so placed that uniform distribution of illumination is obtained.

5. Long double-ended and double-faced disc-tipped carrier rods are used, white, red, green and blue discs. (Any size discs may be used, but 5 mm. and 10 mm. diameters are most satisfactory for routine work.)

6. Charting is done in chalk, preferably on the reverse surface of the curtain, invisible to the patient. The shadow of the tip of the rod is clearly seen through the translucent curtain. An India ink scale is stamped on the reverse surface, which clearly shows when photographed.

7. The curtain after use should be rinsed in cold water and replaced upon the frame to dry.

8. The negative or positive may be used in a stereopticon.

9. A degree on the tangent curtain is sufficiently large for determining minute changes in scotomata and peripheral limitations. The blind spot is  $6^{\circ} \times 7^{\circ}$ .

10. The charts when photographed furnish a convenient, accurate and permanent record.

11. The full visual field record is on a single chart.

The disadvantages are those incident to a tangent screen.

### A CASE OF ORBITAL HEMANGIOMA TREATED WITH RADIUM\*

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The following case, which proved to be cavernous hemangioma of the orbit, not involving adjacent structures, was successfully treated with radium.

D. G., a white male, age six, first seen May 21, 1923.

History: No family history of neoplasms, no traumatism. The birth was not instrumental. A slight prominence of the left upper eyelid was noticed when two weeks old, but as the eye appeared normal, the attending physician assured the mother that the condition was unimportant. It was discernible only at times, particularly after crying. The swelling of the eyelid was scarcely ever seen after the first year, but during the past three weeks it has been very noticeable.

Examination: Vision, each eye (uncorrected), 20/15.

O. D.: Externally there is no abnormality. The pupil responds promptly to normal stimuli. Ocular rotation is of normal extent. The fundus is healthy.

O. S.: There is a protrusion of the outer half of the upper lid which completely obliterates the tarso-orbital sulcus. The lid covers slightly more than the upper one-third of the cornea. There is no discoloration nor increase in volume of the lid. There is no ptosis. The globe is displaced slightly down and in, but there is no exophthalmus. Ocular rotation is unimpaired. Everting the lid shows beneath the conjunctiva of the cul-de-sac a tumor of a bluish color which is soft, slightly compressible, not pulsating, does not increase in size on stooping forward, and gives no bruit to auscultation. It seems to come from the region of the lacrymal gland. The cornea, pupil, iris, and fundus are normal and similar to the fellow-eye.

Examination of the nose and nasal sinuses discloses no pathology.

The patient was kept under observation for a week, when it was definitely determined that the tumor was increasing in size. There was also a moderate exophthalmus, with impaired elevation of the left eye, causing vertical diplopia. Vision was reduced to 20/50.

The patient was taken to the hospital May 29. An external canthotomy was performed so the upper lid

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could be drawn out of the way. A horizontal incision was made over the bluish mass and the tissues reflected back. Keeping close to the roof of the orbit, an exploratory dissection was made to determine the origin and extent of the tumor. It was found arising from the muscle funnel, protruding between the superior and external recti muscles, and not connected with the lacrymal gland. The mass was not encapsulated and was composed of a large number of dilated and interwoven blood-vessels. Puncture of the tumor gave about two ounces of venous blood. The mass receded into the muscle funnel and the globe returned to its proper position.

It was decided to use radium in preference to a Kromlein dissection of the orbit, so 50 milligrams of radium, screened with one millimeter of silver, was introduced into the body of the tumor for thirty minutes. It was felt that destruction of the neoplasm by inducing fibrosis was a safer procedure and less mutilating to the bony configurations of the face and orbital contents than an extensive dissection of the orbit. Radium was preferred to a Kromlein dissection which would have been necessary to remove the tumor; also the vascular origin of the tumor was unknown and whether or not there was intimate connection with the cavernous sinus.

There was no reaction the following day, but on the second day there was marked swelling of the tumor, giving some exophthalmus and considerable displacement down and in of the globe.

June 2 there was choke disc of 3 D., vision 20/200. The mass was punctured and it was found that the swelling of the tumor was due to extravasation of blood throughout the tumor mass. Evacuating about one ounce of blood caused considerable reduction of the exophthalmus and displacement of the globe. A compress bandage was worn continuously.

June 3 the swelling of the nerve head was barely appreciable. Vision 20/40 plus.

June 11 radium was again applied to the tumor, the same quantity of exposure as the first time. More fibrous tissue throughout the tumor was noticed than at the first operation. This was followed by the same reaction as was the first application of radium. It was necessary to open the tumor four times after the second use of radium to evacuate the hemorrhage and serum from the tumor and relieve the retrobulbar pressure. The hemorrhage would form in the tumor and require puncturing about every six days. The last opening was done July 10, at which time there was noticed marked fibrosis throughout the neoplasm. When the retrobulbar hemorrhage would reform, the vision would drop to 20/100, there would be swelling of the nerve head of two diopters, some exophthalmus and diplopia. After each puncture of the tumor the vision would return to 20/40, with reduction of swelling of the nerve head.

Since July 10 there has been a steady improvement in the vision and recession of the tumor until now it is impossible to detect any difference of the two eyes and appendages. The fundus and optic disc of the left eye have no abnormality nor anything to indicate a papillitis ever existed. Vision (uncorrected) 20/15, tested on Lloyd's stereocampimeter shows an enlargement of the blind spot of two degrees along the inferior and temporal margins as compared to the fellow-eye. Ocular rotation is unimpaired. There is binocular vision.

The first case of hemangioma of the orbit on record was published by Abernethy, in 1810, but the diagnosis is questionable. The first incontestable case was by Walton, in 1853. Berlin, in 1880, collected 54 cases, but several of these are probably

wrong diagnoses. Lagrange, in 1904, collected 83 cases from the literature (Parsons).

Cavernous hemangioma consists of many widely dilated and anastomosing vascular channels, supported by thin connective tissue septa. They are usually of congenital origin and may appear at any age. No part of the body is exempt. They enlarge by the distention of the original vessels and formation of new ones. The course is usually slowly progressive (Ewing).

The majority of hemangiomata of the orbit are secondary to simple hemangioma of the ocular appendages, but when the growth originates within the orbit it is usually encapsulated by a firm fibrous capsule, due to organization of the surrounding tissue as the tumor slowly increases in size.

Treatment of orbital hemangioma consists of extirpation, ligation, electrolysis, injection of coagulating and irritating substances, x-ray therapy and radium. Extirpation has been the procedure followed in most of the reported cases and should be done, when a surgeon does not feel certain of the diagnosis without a microscopic preparation or when other measures of combating the neoplasm have failed. In most instances this requires a very extensive opening of the orbit, such as Krömlein's method, which will cause trauma of the orbital structures and produce some external disfigurement. Any disfigurement, even though it be of small extent, is of serious concern to a young individual.

Ligation is unsatisfactory and requires opening the orbit, which if done, it would be better for the surgeon to go ahead and dissect out the neoplasm.

Klinedinst reported a case cured by injecting alcohol into the tumor after electrolysis had failed. This is another method of inducing fibrosis throughout the tumor.

So far as can be learned, this is the first case of cavernous hemangioma of the orbit treated with radium. It requires no extensive opening of the orbit, is painless and readily applied, but the dosage must be guarded because there is the possibility of destruction of the optic nerve or degeneration of the globe.

In the case reported it was decided to first use radium and reserve opening the orbit until a last resort, but happily the latter procedure was not necessary.

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## PHOTOGRAPHING THE HUMAN FUNDUS\*

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The photography of the fundus naturally followed the invention of the ophthalmoscope. The substituting, however, of the observer's eye with an inanimate apparatus presented many almost insurmountable difficulties. The conquering of these difficulties, one after another, as represented in this fundus photography, will always remain a monument to the patient and painstaking work of Hofrat Professor Dimmer, of the University Eye Clinic II, in Vienna.

When there last summer as an American, I was glad to find that his work had been recognized by the Rockefeller Foundation. They furnished the funds for the construction, by Zeiss, of his new apparatus, the one which is now in use in Eye Clinic II.

For those who are unfamiliar with Vienna, I have included in the slides a picture of the entrance to the Allgemeines Krankenhaus. Above this gate, and extending to right and left, are the wards made memorable by the labors of Fuchs and now the Dimmer Clinic. Professor Dimmer's picture follows. Through his kindness I am showing these unretouched fundus pictures.

An explanation of the apparatus is necessary in order to understand its construction and operation. The new camera so completely fills the room where it is located that I could not obtain an adequate

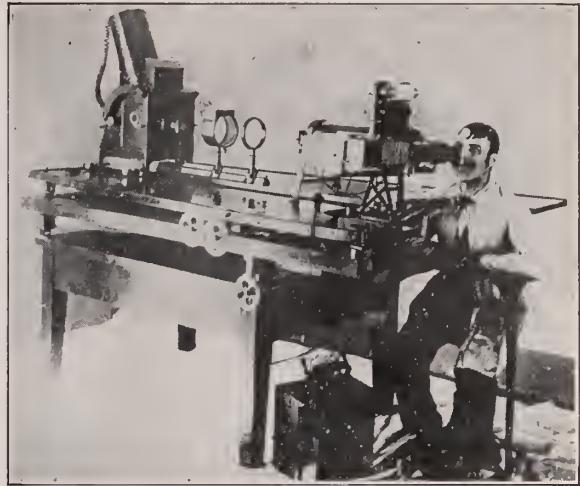


Fig. 1. The Dimmer Fundus Camera.

photograph of it, therefore a picture of the older apparatus, containing the essentials of the newer model, must be substituted.

In the lamp house is the source of illumination, a 220 volt arc lamp. The light is passed through a water filter to remove the heat. Beyond the filter is a ring, across which is stretched a thin wire. This carries a small ball, to be used as a fixation point for the eye which is to be photographed. Beyond is the camera itself (fig. 1).

The three large wheels at the side of the table move the whole apparatus up or down, right or left, or closer to or farther from the eye to be photographed. If the latter is incapable of fixing, then the other eye fixes on the image of a miniature red lamp, seen in a small mirror placed in front of the second eye.

The principles of the apparatus follow (fig. 2): L is the arc lamp, A a large condenser lens, which gives an image of L in  $d_1$ .  $d_1$  is a hole in a diaphragm covered by a dark London smoke-glass, so that the apparatus can be focused without admitting unnecessary light to the fundus. From  $d_1$  the rays of light go to a second lens B, which produces again an image of L. Before this image is produced, the rays are deflected by a small mirror S, so that the last image of L is formed in the pupil of the eye in  $d_2$ . The rays then diverge in the eye and a large area, ab of the fundus, is illuminated.

The rays from the area ab pass through the lower half of the pupil to an objective lens C. By this is formed an inverted image of ab in  $A_1B_1$ . From here the rays diverge and find their way to a second objective D. This objective contains in itself a diaphragm, the shape of a crescent, covering the

\*Read before the Twelfth Annual Meeting of Pacific Coast Oto-Ophthalmological Society, Portland, Ore., July 10-12, 1924.



FIG. 3

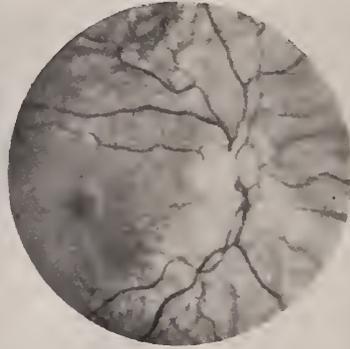


FIG. 4

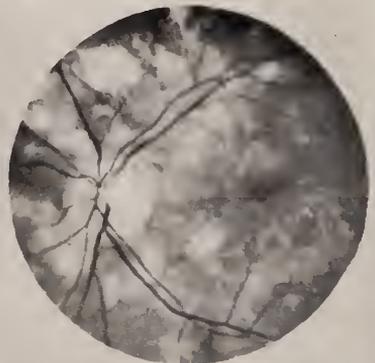


FIG. 5



FIG. 6



FIG. 7



FIG. 8

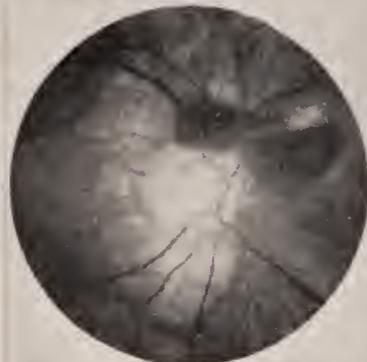


FIG. 9

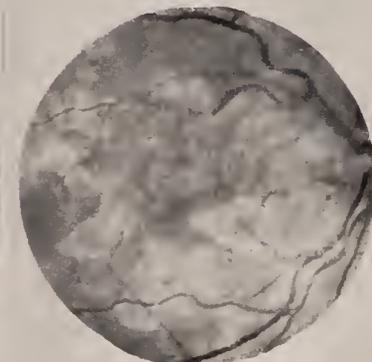


FIG. 10

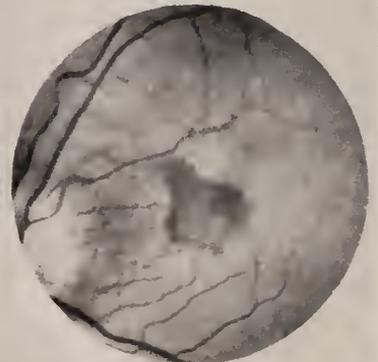


FIG. 11



FIG. 12

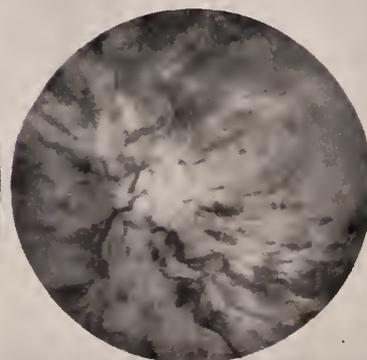


FIG. 13



FIG. 14

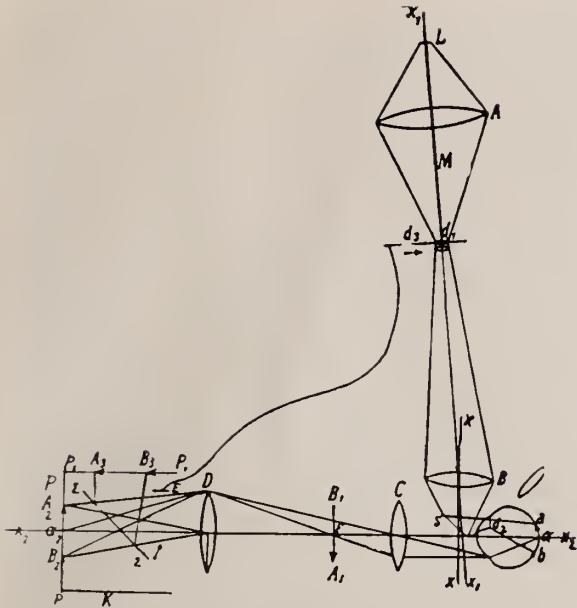


Fig. 2. Diagram of Dimmer Fundus Camera.

REPORT OF CASES

1. Normal Fundus. Man, aged 22 years (Fig. 3).
2. Papillitis. Case of tumor of the brain in a girl 22 years old. Photograph shows left eye. Swelling measuring 2 D. Vision 6/6.
3. Temporal Conus. Visible vessels of the choroid, cilioretinal vessel. Boy of 15 years. Myopia 7 D. Vision 5/8 (Fig. 4).
4. Temporal Conus. Hyperopia 0.5 D. Vision 6/5.
5. Medullated Nerve Fibers in the Retina.
6. Choroiditis Desseminata. Woman 34 years old. Left eye. Vision 6/18. Etiology probably tuberculosis (Fig. 5).
7. Retinitis Albuminurica. Woman 49 years old. Left eye. Vision 6/24. Partly stellate, partly ring-shaped degeneration in the macula. A few hemorrhages present (Fig. 6).
8. Retinitis Albuminurica. Photograph shows right eye in the same case. White spots in the region of the macula and between macula and disc, distributed in the shape of a quarter star. Vision 6/8.
9. Choked Disc. Woman aged 47 years. Swelling of the disc 3 D. Left eye. Hemorrhages and white spots in the retina. Etiology lues cerebri (Fig. 7).
10. Hemorrhages in the Retina. Patient 67 years old (Fig. 8).
11. Choroiditis Tuberculosa. Woman aged 26 years. Right eye. Vision 6/6.
12. Retinitis Exudativa. Male student, aged 27 years. No cause found. Could see only the movements of the hand.
13. Periretinal Hemorrhages. Male, 55 years old. Near the nasal margin of the disc; retinal hemorrhage near the upper margin of the disc; small hemorrhages farther off in upper part of the retina. Left eye. Vision with -4 is 6/8 (Fig. 9).
14. Chorioretinitis Tuberculosa. The right eye of a girl of 22 years. Vision 6/36 (Fig. 10).
15. Hemorrhages in the Region of the Macula. Man aged 53 years, right eye. Changes after old hemorrhage. Vision 6/36.
16. Hemorrhage in the Region of the Macula. Left eye in same case. Vision 6/60 (Fig. 11).
17. Retinochoroiditis. Man 38 years old. Right eye. Etiology tuberculosis. Vision 6/9.
18. Retinochoroiditis. Same case. Left eye. Vision 6/9.
19. Conus Temporalis. Right eye, with vessels coming out of the conus. Vision with -4.5 was 6/6.
20. Conus Temporalis. Left eye of same case, with vessel coming out of conus. Vision with -4.5 was 6/5.
21. Retinitis Albuminurica. Woman 51 years old. Right eye. Hemorrhages in the retina, especially near the disc; white spots in the region of the macula and above. Vision equalled fingers at 2 M (Fig. 12).
22. Retinitis Albuminurica. Same case. Left eye. A few white spots near the macula. Hemorrhages above the disc. Vision 6/18.
23. Phlebitis Retinalis. Right eye of a woman of 45 years. Dilatation of all veins, the walls of which are somewhat thickened. Tortuosity of the upper veins of the disc, caused by thrombosis and collateral dilatation. Vision fingers at 1/2 M.
24. Phlebitis Retinalis. The same case, left eye. Thrombosis of the central vein in the inferior part of the fundus. Hemorrhages in the retina, dilatation of the veins. Vision 6/24 (Fig. 13).
25. Phlebitis Retinalis. The same eye two weeks later (Fig. 14).

lower half of D. This diaphragm shuts out all the rays which come out of the upper half of the pupil, and prevents their reaching the photographic plate. In this manner is produced a reflexless image. This principle was subsequently used by Gulstrand in his large, reflexless ophthalmoscope.

From D the rays go to an oblique mirror E E which deflects the light so that the image of the fundus is formed on the focusing glass P<sub>1</sub>P<sub>1</sub> in A<sub>3</sub>B<sub>3</sub>. At the instant that the focusing is completed, the operator presses a button which causes the mirror E E to swing up in the direction of the arrow, and out of the way of the rays of the photographic plate in A<sub>2</sub>B<sub>2</sub>. In this position the mirror E E touches a switch E, causing an electric current to move the diaphragm d<sub>3</sub> in the direction of the arrow, and, instead of the hole d<sub>3</sub> covered with the gray glass, there is an open diaphragm, which allows the full rays of the electric arc to illuminate the field for 1/7 of a second.

The size of the original negative is 40 mm., and the magnification of the fundus equals five to six times. The area covered is five to six disc diameters. Isochromatic plates are used. The patient holds his head in position by biting into a mass of dental composition, while it is warm. The dental composition covers an iron support.

**Treatment of Arspnenamin Dermatitis, Mercurial Poisoning and Lead Intoxication.** Charles C. Dennie and William L. McBride, Kansas City, Mo. (Journal A. M. A., Dec. 27, 1924), have used sodium thiosulphate (ordinarily known as sodium hyposulphate) in the treatment of arsenical, mercurial, lead and bismuth poisoning with good result. It is a highly efficient and rapid neutralizing agent for these common metallic poisons. With this preparation available, it is possible to administer the maximum amount of treatment in syphilis with the assurance that, should metallic poisoning take place, it can be controlled. The authors' experience has demonstrated that the original dosage is most efficacious, and that the repeated administration of large doses at the onset shows no apparent advantage. When these metallic poisons have been given intravenously or intramuscularly, the sodium thiosulphate is given intravenously in not more than 20 c.c. of distilled water for each dose, every day for four days, and then every other day for as many doses as are necessary to complete the cure. The original dosage employed has been found to be the best, 0.3, 0.45, 0.6, 0.75, 0.9, 1.2 and 1.8 gm. When the metallic poison has been taken by the mouth, the stomach is washed out with 500 c.c. of water, to which has been added 30 gm. of sodium thiosulphate. A similar amount is then given by mouth, and allowed to remain in the stomach. The same procedure as described above is then carried out. When mercuric chloride is placed in the vagina, 5 per cent sodium thiosulphate douches should be used in order to neutralize any free mercury, and then hydrous wool fat ointment, to which 1 per cent sodium thiosulphate has been added, is applied.

## THE INFLUENCE OF HIGH BLOOD-PRESSURE IN CATARACT SURGERY\*

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So many elements enter into the problems of cataract surgery that in attempting to tabulate the influences of certain systemic conditions, one cannot disregard other equally important considerations in the success or failure of operative procedures. Complications within or about the eye itself, technical details of operative method, the psychic condition of the patient and that very important element, the personal equation of the surgeon, his experience and judgment, poise, dexterity, even his vision, are important considerations. Analysis of personal experience, as it pertains to incidence of surgical accidents and their causes, or analysis of visual results, must include careful study of all these elements.

Likewise, in a brief paper it would be impossible to discuss every systemic condition met with. For example, syphilis, arthritis, pulmonary diseases, prostatitis, chronic focal infections, the many and various nervous disorders and innumerable other diseases are not infrequent complications. Many of these complications coexist in the same patient so that, where failure occurs, it may not be possible to attribute it to a single cause. Many apparently unfavorable cases are followed by successful results; among the cases in the present series none of the arthritis deformans, none of the known syphilitics, none of the prostatics had serious complications at the operation or afterward which contributed to failure, although moderate iritis occurred several times.

Ophthalmic literature contains few statistic records bearing upon the influence of circulatory diseases and high blood pressure in their relationship to ocular surgery. The practical question as to just how much the retinal and choroidal capillary pressure may vary with changes in general arterial pressure, will probably never be accurately answered. Although much valuable experimental work has been done, as yet there is no means of determining with exactness the blood-pressure in the capillaries of the eyeball. Henderson, Priestly-Smith, Magitot, Bailliant, and others have devised methods and apparatus for the purpose of determining the systolic and diastolic pressures in the retinal ar-

teries. Briefly described, the technic employed has consisted of introducing into the vitreous a canula connected with a manometer, or by applying externally a so-called ophthalmodynamometer. By recording the pressure required to produce pulsation of the retinal arteries, which are observed with the ophthalmoscope, the diastolic pressure is determined. By raising the pressure still higher, until pulsation in the vessels ceases, but without complete obliteration of the blood current, the systolic pressure is measured. Bailliant<sup>1</sup> estimates the normal diastolic pressure for the retinal arteries at from 25 to 40, and the systolic pressure at from 75 to 100 mm. of Hg. Priestly-Smith<sup>2</sup> believes a range of 40 to 50 for the diastolic and 75 to 90 mm. of Hg. for the systolic pressure is fairly accurate. Obviously, the pressures in the capillaries is very considerably less. Velter concluded we are able to estimate the retinal blood-pressures from the brachial pressures inasmuch as he found them practically parallel.

The question as to whether high blood-pressure as ordinarily measured and when accompanied by marked arteriosclerosis is a very unfavorable factor in cataract cases, as one might readily infer, is not easily answered and is even doubted by many. R. Foster Moore<sup>3</sup> believes that at least in some cases of arteriosclerosis with high brachial pressure the pressure in the retinal arteries may be actually lowered below its relative normal. He basis this opinion in part upon the fact that in some of these cases the amount of external pressure upon the globe required to produce visible pulsation of the retinal arteries is often less than in healthy persons, and that, therefore, the diastolic pressure is less in these cases than when the general blood-pressure is normal. He further asserts that vigorous measures to reduce general blood-pressure may act inimically toward nutrition of the tissues and may even make liability to thrombosis of small vessels more possible. The question may well be raised if marked arteriosclerosis of the carotid or ophthalmic arteries may not materially lower intravascular pressure in the retinal arteries. Undoubtedly, as Priestly-Smith<sup>4</sup> says, the problem of high blood-pressure may not be fully solved by considering only the physical principles involved. There are many physiologic factor which must be weighed; one of these is the very important influence of vasomotor changes in the vascular system, constantly raising and lowering capillary pressure.

When one considers the subject from a purely clinical standpoint, it is obvious that arterial degen-

\*Read before the Twelfth Annual Meeting of Pacific Coast Oto-Ophthalmological Society, Portland, Ore., July 11-12, 1924.

eration is present in the majority of cases of senile cataract and that surgery may not be undertaken without attempting the inevitable risks incident to these senile vascular changes. Such conditions as cardiac diseases, arteriosclerosis, renal insufficiency and anemia frequently complicate increased arterial tension and add to the operative hazard. When these complications coexist and a chronic toxemia from infection, faulty elimination or impaired metabolism is superadded, as is so often the case, one may well wonder how the pitfalls of cataract surgery are ever avoided.

In order to determine, more particularly from personal experience, what relationship high blood-pressure and its associated conditions bears to the operative complications, to the accidents and complications during convalescence, and how much it influenced the end-results of cataract surgery, analysis of 210 consecutive operations upon private patients has been reviewed, covering a period of nearly five years, most of the operations being done in one hospital, the Miller Hospital in St. Paul. There were 102 males and 108 females, the age varying from 26 to 86, those over 70 years of age numbering 83. The average age of males was 65; of females 63½. Congenital and recent traumatic cases have not been included, although nine old traumatic cases, in which operation differed in no respect from that for senile types, are included. All the operations done, with the exception of three intracapsular expressions, have been more or less according to the classical method most of us employ. The majority were done with the conjunctival flap, 37 with the bridge flap. Fifty-seven had preliminary iridectomy and as a rule this was done at least ten days, although often some weeks or months, before the removal of the lens. Capsule forceps was used in 153, the knife or cystitome 44 times, the Homer Smith preliminary incision of the capsule in 10 cases. The Hess technic, combined with small basal iridectomy after delivery of the lens, was used in 87 cases. Excepting one instance, No. 2, none was operated on when the ocular tension was known to be elevated (on finger test), although no routine Schiötz tonometric tests are tabulated, not being taken except when glaucoma was suspected. Apparently no unfavorable influence followed the almost routine use of atropine a few hours before operation.

Effort has been made to enlist the cooperation of the internists in obtaining thorough physical examinations of patients, and treatment before operation

when the latter seemed definitely indicated. In about one-fourth of the patients no physical examinations were made, the general healthy appearance making this seem unnecessary. Routine Wassermann tests were not made. Only those physical findings which are important to the subject have been tabulated in Table I. As would be expected, arteriosclerosis and arterial hypertension are the most frequent complications met with, with albuminuria and definite cardiac disease often present. Systolic blood-pressure records of 169 patients are shown in Table II, 47 being in excess of 180 mm. hg., 82 being above 160, and 16 over 200. The average systolic pressure was approximately 162 mm. hg.

TABLE I.

Pyorrhea .....	8
Diabetes .....	6
Cardiac disease .....	9
Anemia, marked .....	3
Arteriosclerosis .....	46
Albuminuria .....	23
Arterial hypertension .....	82
(over 160 systolic)	
Chronic emphysema } .....	10
Asthma } .....	
Chronic bronchitis } .....	
Malnutrition, debility .....	7
Syphilis .....	4
Arthritis deformans .....	6
Prostatitis .....	8
Cystitis .....	4
Hemiplegia .....	2
Chronic sinusitis .....	2

TABLE II.

Blood pressure (systolic)	
Under 120 .....	12
120 to 140 .....	43
140 to 160 .....	32
160 to 180 .....	35
180 to 200 .....	31
200 to 220 .....	9
220 to 240 .....	7
	169
Over 160 systolic.....	48.5 per cent
Over 180 systolic.....	28.0 per cent
Over 200 systolic.....	9.4 per cent

Of the 169 recorded blood-pressures, the average for males was 157.6; for females 173. Bader<sup>5</sup> found the average blood-pressure readings in 150 cases examined by him to be over 160 in 40 per cent of males and 38 per cent of females. My own figures were males over 160, 42 per cent; females over 160, 58 per cent.

By preliminary treatment with rest and bromides, salt free restricted diet and eliminative measures, it was frequently possible to reduce high blood-pressure very considerably. In the six diabetic cases it was not difficult to cause glycosuria to disappear and to reduce the blood-sugar percentage to approximately normal. In patients show-

ing albuminuria and impaired renal function, rest and dietetic treatment generally resulted in much improved conditions. With many debilitated and in the two hemorrhage cases mentioned later (Nos. 97 and 116) cannot be definitely stated, but presumably it did.

**TABLE III**  
**Loss of Vitreous (7.6 per cent)**

Case	Age	B. P.	Amount	Result		
Mr. L. J. . . . .	2	30	170	++	20 25	Tension plus.
Mrs. J. G. . . . .	40	64	140	++	20 40	Hypermaturation, traum cataract. Myope
Mr. G. DeL. . . . .	64	80	168	Slight	20 40	
Mr. G. W. . . . .	67	72	170	++	20 20	Hypermaturation cataract. Myope
Mr. C. P. Q. . . . .	80	80	190	Slight	20 200	Hypermaturation.
Mrs. H. O. . . . .	99	80	180	Fluid	20 200	
Mr. A. J. . . . .	120	64	155	Considerable	20 50	Melancholic.
Mr. T. H. . . . .	125	58	192	Moderate	20 20	Myope
Mrs. Wm. K. . . . .	127	58	160	Slight	20 50	Diabetic
Mr. R. H. . . . .	143	61	230	Slight	20 25	Myope. B. P. 270 at one time
Mr. D. B. . . . .	148	73	160	Slight	20 40	Myope.
Mr. H. C. . . . .	150	51	134	Moderate	20 50	
Mr. T. H. . . . .	155	58	190	Slight	20 40	Myope.
Mrs. D. K. . . . .	156	69	180	Fluid	10 100	Old Inter. keratitis.
Mrs. O. J. L. . . . .	182	77	132	Fluid		Myopic R. E. Enucleated after iridocyclitis.
Mr. T. H. . . . .	210	63	130	Slight	No record	

anemic subjects, it was possible to at least approximate normal conditions. Tangible sources of infection in teeth, sinuses, and in two patients badly diseased tonsils were eliminated; special attention was directed to removal of decayed teeth and treatment of pyorrhea. Too often necessary co-operation by patients was unobtainable either because of failure upon their part to appreciate the insurance value of these preliminary measures, or on account of the delay and expense involved. The conjunctiva and lachrymal sac received special treatment when indicated and in every instance, whether specially indicated or not, antiseptic treatment of the conjunctiva was carried out at least for a few days before operation.

When failure has followed these efforts, it was due more frequently to some underlying systemic condition than because of technical difficulties. With added experience the conviction has grown that this preliminary preparation of the patient before operation has been of enormous aid in securing better end-results than before group diagnosis and treatment was instituted. Although the total number of cases is relatively small for definite conclusions, the results probably fairly represent the experience of most ophthalmologists working outside of special hospitals.

The immediate complications chiefly dreaded during cataract operation are expulsive hemorrhage and loss of vitreous. Loss of vitreous occurred sixteen times, 7.6 per cent, including every case in which it was noted. Whether or not it occurred

A review of the systolic blood-pressure of these sixteen cases shows six recorded 180 or over (37.5 per cent), whereas of the 169 total cases recorded, 47, or 28 per cent had a blood-pressure of 180 or over. It is noted that many of these patients were myopic, presumably with fluid vitreous. Moreover, degenerative changes within the eye and technical difficulties in operating contributed to loss of vitreous in several instances. All but one secured useful vision. The fact that it complicated operation in only one of the sixteen patients with systolic blood pressure over 200 mm. would further indicate that excessively high blood-pressure was not an important factor favoring loss of vitreous. Ordinary clinical experience proves that external pressure from the orbicularis muscle from fixation forceps, or undue pressure in attempting intracapsular expression, delivery of a dislocated lens or through too small an incision, are all causes of much greater importance than pressure from within the globe. It is doubted that increased arterial tension was the sole or chief cause of loss of vitreous in any of the cases in Table III.

Fortunately no instance of expulsive hemorrhage occurred, but this is not unusual in any small series of cases. Herbert<sup>6</sup> states that he met with this accident only nine times in about five thousand extractions (twice in the first three thousand), that DeWecker reported it eight times in three thousand operations and Sattler only four times in over three thousand operations. Hemorrhage into the anterior chamber from the conjunctival wound

or immediately following iridectomy not infrequently complicated the operation by obscuring view of the anterior chamber and making capsulotomy more difficult, especially the use of capsule forceps. Ordinarily it does not add any serious difficulties to the expressions of the lens. Bleeding into the anterior chamber during convalescence was noted ten times and from the retinal or choroidal vessels caused failure in the end-results in two instances (cases 97 and 118).

preliminary iridectomy and a later easy extraction of the cataract, a severe intraocular hemorrhage occurred on the fifth day following operation. This patient was of the agitative, highly nervous and apprehensive type. Two weeks after the disastrous hemorrhage she suffered a cerebral hemorrhage and died during the fourth week following operation.

Case 118 had an iris prolapse with the hemorrhage which occurred on the fourth day. The prolapse was resected, the clot removed from the lips

**TABLE IV.**  
**Hemorrhage.**

Case	Age	B. P.	Irid.	Character	Vision	Probable Cause.	
Mrs. M. T.....	11	47	N. R.	(b)	A. C. 5th D.	20/20	Patient rubbed eye.
Mrs. J. R.....	32	57	150	(c)	A. C. 4th D.	C. F.	Iritis.
Mrs. A. M.....	47	70	N. R.	(c)	A. C. 5th D.	20/50	.....
Mrs. K. W.....	63	74	160	(b)	A. C. 5th D.	20/25	.....
Mrs. M. B.....	71	66	200	(a)	A. C. 5th D.	20/30	Myope, high B. P.
*Mrs. K. D.....	97	73	238	(a)	Ret. 5th D.	.....	High B. P.
Mr. E. P.....	118	86	205	(c)	Ret. 4th D.	6/200	High B. P.
Mrs. J. C.....	126	79	150	(c)	A. C. 5th D.	20/25	Anemia
Mrs. O. L.....	182	77	132	(c)	A. C. 6th D.	.....	Iritis, Vit. Lost.
*Mrs. N. S.....	183	78	165	(c)	A. C. 5th and 8th D.	20/75	Anemia. Hb. 48
Mrs. J. L.....	199	67	140	(b)	A. C. 3rd D.	20/50	.....
Mrs. W. K.....	200	59	160	(a)	A. C. 4th D.	20/50	Diabetes.

Total patients with hemorrhage during convalescence—12—(5.7 per cent).

High blood pressure probably a contributing cause in Nos. 71, 97, 118.

Total patients with result impaired (Nos. 97, 118, 182)—3.

\*Fellow eye lost from hemorrhage and detachment.

(a) preliminary iridectomy, (b) combined extraction, (c) marginal postextractive iridectomy.

It will be noted that most of the postoperative anterior chamber hemorrhages were first observed on the fourth or fifth day following operation. In partial explanation of this, it may be stated that dressings are ordinarily done on the second and fourth or fifth day after operation. Perhaps the custom of leaving the unoperated eye uncovered after the first dressing, which permits freer movement of the operated eye with its fellow, may be a cause for the slight hemorrhage noted at later dressings. Slight traumatism during the dressing might also be a cause.

Case 72 was a moderately high myope with fluid vitreous, but with a systolic pressure of 200. Ultimate vision was 20/30, maintained to this date. The other eye had been successfully operated on one year previously. Case 97 had an intraocular hemorrhage in the previous eye, operated on elsewhere although the operation itself was without complication. The intraocular hemorrhage accompanied retinal detachment, following needling some weeks after extraction.

In the eye operated on by me, notwithstanding the fact that she was hospitalized for a period of six weeks on account of her excessive high blood-pressure and phlebotomy was done both before a

of the wound and a Kuhnt flap drawn over it. After a low grade iritis lasting several weeks, he obtained vision of 6/200, probably not long maintained. This case is listed with the failures.

In each of these last two cases the blood-pressures were very high, 238 and 205, and together with the accompanying arterial degeneration, undoubtedly caused the unfavorable results.

Hemorrhage twice occurred in very debilitated and anemic patients (cases 126, 183), without impairing vision. One of these (183) had retinal detachment in the fellow eye, following extraction elsewhere a few years previously. Iritis was the probable reason for blood in the anterior chamber in case 32. In case 182 the hemorrhage accompanied incarceration of pupil margin in the wound, vitreous having been lost at operation. Iridocyclitis necessitated enucleation some weeks after extraction.

Of the six diabetics, only one (case 200) had postoperative hemorrhage. All were sugar-free when operated on. According to Wheeler<sup>7</sup>, this complication is six times more frequent in diabetes than the average (which was 4.57 per cent in 2123 extractions done at the N. Y. Eye and Ear Infirmary), the highest incidence of hemorrhage oc-

currence between the ages of 40 and 50. From this latter fact, Wheeler concluded arteriosclerosis was probably not a factor.

A review of Table IV shows no record of the blood-pressure in two cases. Of the remaining ten, only three had excessively high blood-pressure, 200 or over, and in one of these fluid vitreous complicated high myopia. In the remaining two it seems probable the very high systolic pressure was the chief cause of hemorrhage.

Iris prolapse sufficient to require operation for its relief occurred five times; in four additional cases there was slight incarceration of one pillar with no delay in healing or impairment of vision.

extraction is iridocyclitis or uveitis. This complication usually assumes a chronicity which resists all treatment and more frequently arises from endogenous than from exogenous causes. There is every reason to believe that in many patients the same toxic causes which favor arterial degeneration and arterial hypertension, often with renal complications, may also favor low-grade intra-ocular inflammation. If the uveitis is most frequently a blood-borne infection, as many of us believe it is, we may readily argue that patients with arterial hypertension, venous stasis, faulty elimination, impaired metabolism or impaired renal function are certainly more prone to low-grade in-

**TABLE V.**  
Iris prolapse requiring operation (.024 per cent).

Case	Age	B. P.	Time	Cause	Irid.	Result.
Mrs. M. S.	33	68 150	3rd D.		(d)	20 30
Mrs. J. S.	65	79 190	2nd D.	Vomiting	(c)	20 40
Mr. E. P.	118	84 205	4th D.	Hemorrhage	(c)	Failure (6,200)
Mrs. D. L.	182	77 132	6th D.	Hemorrhage	(c)	Iridocycl., Enucleation.
Mr. F. B.	204	83 142	3rd D.	Strangury	(c)	20 25

(c) Peripheral iridectomy after delivery of lens.  
(d) Simple extraction.

Case 182 had a low systolic pressure; there was undoubted exogenous infection following difficult delivery due to enophthalmos, a stone-deaf patient and necessity of using the lens hook.

In case 118, with systolic pressure of 205, the intraocular hemorrhage preceding the prolapse was

fections than those in whom the circulatory and renal function is not seriously impaired.

In this series iritis, iridocyclitis and uveitis during convalescence, occurred fifteen times (7 per cent) to a degree sufficient to unduly prolong the patient's stay in the hospital.

**TABLE VI.**  
Iritis, Iridocyclitis, Uveitis (15) (7 per cent).

Case	Age	B. P.	Vision	Probable Cause
*Miss H. S.	5	68 150	20 200	Endogenous
Mrs. E. L.	15	72 180	20 100	Diabetic. Vis. lost later
Mrs. C. F.	16	76 185	C. F.	Possibly T. B.
*Mrs. H. A.	29	52 240	L. P.	Low grade uveitis
Mrs. J. R.	32	57 150	C. F.	Exogenous from conj., acute iritis.
*Mr. J. M.	42	71 N. R.	20 40	Late uveitis—endogenous.
Mrs. J. S.	65	79 190	20 40	Acute iritis followed prolapse op.
Mrs. A. S.	82	72 160	20 30	Acute iritis.
Mrs. F. H.	109	80 168	20 40	Late uveitis, probably endogenous.
Mr. E. P.	118	86 205	6 200	Hemorrhage, iris prolapse.
Mr. H. S.	123	77 N. R.	20 30	Uveitis later. Vision reduced.
Miss G. S.	161	62 145	20 30	Uveitis later subsided after teeth removed.
Mrs. O. J.	182	77 132	.....	Iris prolapse, chronic iridocyclitis, enucleation.
Mr. O. S.	192	79 188	20 30	Chronic conjunctivitis.
Mrs. O. N.	201	66 128	20 30	"Acute" iritis.

Blood pressure over 100-----S  
\*Fellow eye previous operative failure in three.

undoubtedly due to arterial hypertension, as previously mentioned. With this exception, it is obvious in analysis of Table V that the absence of iridectomy (d), or the incomplete buttonhole peripheral iridectomy after extraction was a much greater factor in the incidence of iris prolapse than was the high blood-pressure.

The commonest cause of failure after cataract

Of the patients listed under this complication, if one excludes Nos. 32, 65, 82, 182, and 192, in whom exogenous infection was the most probable cause and due to technical difficulties, iris prolapse, previous conjunctivitis, etc., there was only one of the remaining ten cases who did not evidence some chronic systemic condition. Most of the patients had fairly high degrees of arterial hyperten-

sion (there was no record in two). Nevertheless, one would hesitate to ascribe the cause of failure to this cause. At least, it is certain that most of the failures due to uveitis were caused from endogenous infection associated with high blood-pressures. There were no instances of suppurative infection or panophthalmitis in this series.

In the final analysis, there were eight immediate failures; eight additional cases were discharged with useful vision which was maintained for periods of from 2 to 16 months; of those operated on during 1924, there are no failures after discharge from observation so far as is known.

blood-pressure in seven of the nine failures in their complicated cases, but in most of these visual impairment was caused by pathology in the fundus or media. In Velter's<sup>9</sup> report of 108 cases with four of hemorrhage following extraction, only one had hemorrhage (into the anterior chamber) among 42 with normal tension, whereas in ten cases with very high blood-pressure, i.e., over 160 mg. Hg., he had three intraocular hemorrhages, one of which was expulsive.

In Table VIII is tabulated all recorded cases with systolic pressure over 200 mm. Hg. with the end-result.

**TABLE VII.**  
**Cause of Early Failure (8).**

Case	B. P.	Vision	Cause	Vis.	
Mrs. C. F.....	16	185	C. F.	Iridocycl.	14 M.
*Mrs. H. A.....	29	240	L. P.	Iridocycl.	3 M.
Mrs. J. R.....	32	150	C. F.	Previous Conjunctivitis.	16 M.
Mrs. L. W.....	49	165	Enuc.	Sec. Glauc, Iridocyclitis.	2 M.
*Mrs. K. D.....	97	238	Nil.	Expulsive Hem. Apoplexy—Death.	11 M.
Mr. E. P.....	118	205	6/200	Expulsive Hem. Iridocyclitis.	16 M.
Mrs. H. W.....	157	170	L. P.	Ret. Detach.	3 M.
Mrs. O. L.....	182	132	Enucl.	Iridocycl., Op. Infec.	4 M.
Subsequent failures, causes (8).					
Discharged with good result, maintained 2 to 16 months.					
Mrs. G. C.....	14	210	20/50	Uveitis, Neph.	14 M.
Mrs. E. L.....	15	180	20/100	Uveitis, Glauc., Diab.	3 M.
Mr. D. C.....	26	168	20/30	Ret. Detach.	16 M.
*Mr. J. M.....	42	No Rec.	20/40	Uveitis, Migrat.	2 M.
Mr. F. J.....	52	No Rec.	20/100	Ret. Pigmen.	11 M.
Mr. C. P.....	107	200	20/25	Ret. Detach.	16 M.
Mrs. F. H.....	109	168	20/40	Uveitis	3 M.
Mr. H. S.....	123	No Rec.	20/30	Uveitis	4 M.

\*Other eye previous operative failure.  
(No vision rec. Nos. 105, 165, 210, of general series).

Note:—All cases of failure, with blood-pressure recorded, excepting Nos. 32 and 182, had blood pressure over 165. No. 32 probably exogenous infection from conjunctivitis. No. 182, stone-deaf. Technically difficult operation, probably exogenous infection.

In the above table with the causes of failures tabulated, there is no record of the blood-pressure in two cases. It will be noted that, excepting cases Nos. 32 and 102, in which there was undoubted exogenous infections, the systolic pressures are uniformly high, seven being over 180 mm. Hg., and in five instances over 200. Case 52 was one of retinitis pigmentosa, in which a subsequent examination showed vision reduced to 4/100. It seems to us significant that, in studying the entire group, the percentage of failures among those with high blood-pressure (over 160) is almost double the average.

Green<sup>8</sup>, reporting 146 intracapsular expressions with blood-pressure records of 81, concluded that the blood-pressure had no very important bearing upon the result. In seven cases with systolic pressure exceeding 200, the results were good in all uncomplicated cases. There was no record of the

The attempt at analysis in this series would indicate with fair certainty the following conclusions:

Abnormal arterial hypertension (over 160 systolic) occurs in approximately 40 per cent of operated cataract cases and may not be disregarded in consideration of the operative risk. Danger of complication at operation and during convalescence is relatively slight, when ordinary precautions are instituted. These precautions are definitely indicated by the sphygmomanometer and consist in the main of preliminary rest in bed, laxatives to relieve splanchnic engorgement, sedatives, restricted salt free diet and perhaps in extreme cases venesection.

Very high blood-pressure and its associated circulatory conditions is one of the important causes of hemorrhage.

The frequency with which high blood-pressure

**TABLE VIII.**  
Cases with blood pressure recorded over 200.

Case		Age	B. P.	Notes	Vision	
14	Mrs. G. C.	63	210 130	High myope.	20 50	
19	Mrs. N. G.	67	220		20 20	
*29	Mrs. H. A.	52	240	Chronic uveitis, possibly migratory. Same condition after extraction on fellow eye.	C. F.	
62	Mrs. A. B.	58	210 110		20 40	
71	Mrs. M. R. B.	66	200 120	Myope. Small A. C. Hem.	20 30	
*97	Mrs. K. D.	73	238 106	Severe retinal hem. Death from apoplexy.		
107	Mr. C. P.	71	200 117	Old retinal detach. in fellow eye. Inoperable cataract.	20 25	Ret. Detach. 16 mos. later.
*118	Mr. E. P.	86	205 130	Severe retinal hem. Iris prolapse.	6 200	
143	Mr. R. H.	61	230 98	Mental confusion during convalescence.	20 25	
164	Mr. R. H.	61	235		20 40	
170	Mr. T. H.	78	200 78		20 30	
178	Mr. C. B.	76	200	Preliminary phlebotomy	20 30	
193	Mrs. A. B.	62	220 80		20 25	
203	Mr. C. H.	72	210 110		20 30	
208	Mrs. M. S.	57	235	18 D. myope Diabetic	20 50	
209	Mr. G. B.	80	210 100	B. P. reduced to 170 before operation.	20 40	

\*Failures—3, No. 29 from uveitis, 97 and 118 from retinal hemorrhage.

is found associated with failures due to iridocyclitis and chronic uveitis would indicate that the same underlying causes were factors in producing these two conditions.

It would seem clearly evident that analysis of failures after cataract operations should be undertaken with a view of determining the reasons for complications or failure from the angle of the internist as well as from the viewpoint of the ophthalmologist, and should include analysis of groups of cases with definite organic changes in their relation to the end-results.

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#### SUTURING OF THE CONJUNCTIVA IN THE CATARACT OPERATION\*

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In no other important operation upon the body is a wound left to heal by itself without being sewed up, except in operations on the eye as for iridectomy or cataract. It is true that in a well conducted operation immediate coaptation of the edges of the incision occurs and healing commences within a few hours, hence suturing of the cornea or the conjunctiva is not practiced by all ophthalmic surgeons. Some, however, sew up the eye and thereby feel that certain operative accidents or secondary complications are not so likely to happen. I occasionally resorted to this procedure for thirty-four years but

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only within the last three years have I made it a routine part of this operation.

Williams, of Boston, in 1867 proposed the corneal suture, which was placed in the cornea and the sclera before the incision. This procedure was presented on account of certain advantages in prevention of iris prolapse. Without doubt, owing to the difficulty of placing the stitches, the liability of cutting the threads, its inconvenience and the necessity for its removal within a few days after operation, it is seldom used. Kalt brought it up again in 1890 and de Lapersonne later. Terrien now recommends it for all cases, where the cataract is expected to be extracted without an iridectomy.

In a recent paper read before the Section on Ophthalmology, American Medical Association, by Harvey J. Howard of Peking, China, "Conclusions Concerning a Scleroconjunctival Suture in Cataract Extraction" gives the following:

I. Advantages of the scleroconjunctival suture:

1. In loss of vitreous it is of immediate help in quickly and quite securely closing the wound.

2. In impending loss of vitreous, at any stage after the section has been made, it is of equal value, and by control of the thread the wound can be kept open as widely or as little as one pleases in order to complete the operation.

3. An ample opportunity is afforded to clear away all lenticular debris that is visible, which favors more rapid recovery and a better visual result.

4. There is immediate and secure coaptation of the wound as soon as the suture is tied.

5. There is quick reestablishment of the anterior chamber, reducing thereby the chances of secondary iris prolapse.

6. It will probably save the eye in cases in which the patients vomit or become violent following operation.

7. The healing of the wound is quicker and takes place with less scar tissue and less astigmatism.

8. The patients are permitted earlier and greater freedom of movement, which is of considerable importance in treating the aged.

II. Disadvantages of the suture:

1. It requires the addition of about two minutes to the duration of the operation.

2. The flap does not heal so well or so smoothly as in uneventful nonsutured eyes.

It is quite unlikely that any safeguard will ever be found that will have no disadvantages. As for the scleroconjunctival suture, it is both my conviction

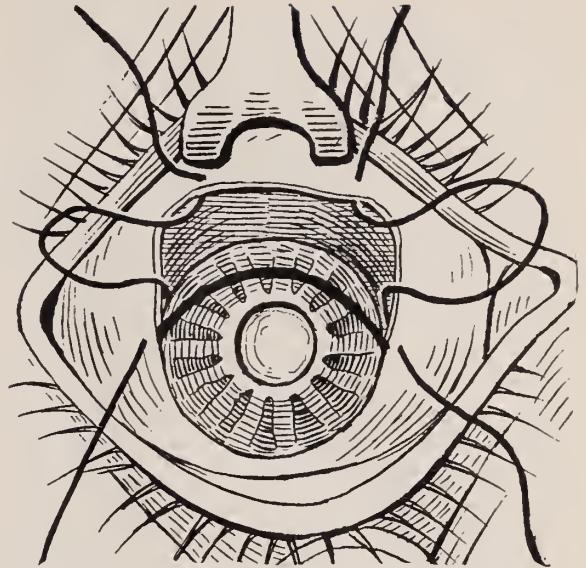


Fig. 1. Conjunctival Sutures for Cataract Extraction (Wurde mann). Method of placing sutures.

and my experience that the weight of the argument is decidedly on the side of the "advantages." It must not, however, be taken for granted that the use of the suture will compensate materially for lack of skill and experience, for the proper handling of the threads does require a certain amount of skill.

The question of the corneal suture is not under discussion in this paper, which is limited to suture of the conjunctiva, of which there are two methods, both adapted to placing the suture before as well as after the incision of the globe. The discussion is again restricted to suture of the wound after the incision of the globe. The suture may be placed either before or after the iridectomy and extraction

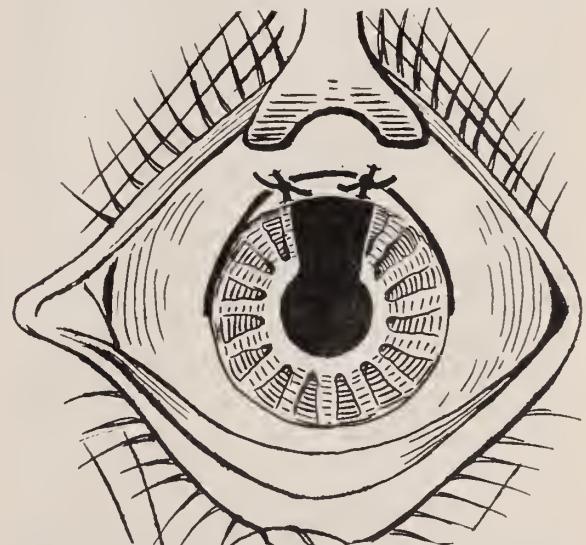


Fig. 2. Conjunctival Sutures for Cataract Extraction (Wurde mann). Completed operation.

of the lens. Here again I restrict myself to speaking of the placing of the sutures after the incision, before the iridectomy and before the delivery of the lens.

Method No. 1 is generally used by the author, as it is his habit to make a corneoscleral incision with a large conjunctival flap. Immediately after its completion two stitches of No. 1, braided, black, iron-dyed silk on very small needles are passed upwards through the conjunctival flap and the upper edge of the cut conjunctiva about 5 mm. apart, equidistant from the vertical meridian. One-half of the knot is made with a large loop, the suture being placed to either side by the assistant; the iridectomy and the extraction is then done. In case of threatened or actual prolapse of the vitreous, the sutures are immediately tightened at any stage of the operation, whereupon the vitreous usually recedes into the eye. The suture is then completed by a "granny" knot.

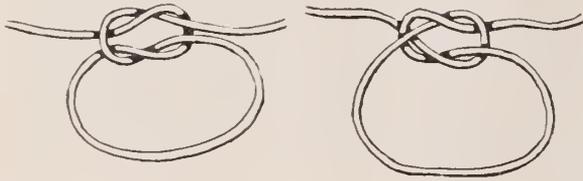


Fig. 3. Square knot.

Fig. 4. Granny knot.

This almost invariably becomes untied, being found in the conjunctival sac or on the edges of the eyelids on the occasion of the first dressing, which is usually made on the fifth day. If the sutures have not become loosened, they may be allowed to remain for a week or more and are then readily removed by the forceps, as the knots are loose and the thread has to be cut very seldom. No infections of the sutures or the wound has occurred in the author's cases; the patients have never complained of any irritation; in fact, they are seldom aware that the eye has been stitched up.

Method No. 2. If the incision has been made through the cornea, which is very seldom the case in the author's practice, the sutures are then placed according to the method of Van Lint; from the conjunctiva at the lower angles of the incision to the upper edge of the cut conjunctiva, 5 mm. apart; the iridectomy and extraction then being proceeded with as in the first instance; the conjunctiva being pulled well down over the wound, in fact covering about one-fifth of the cornea. This method was first devised by Van Lint for protection of the corneal wound against infections. The section of the conjunctiva may be made by the scissors before the incision of the globe and in cases of dislocated

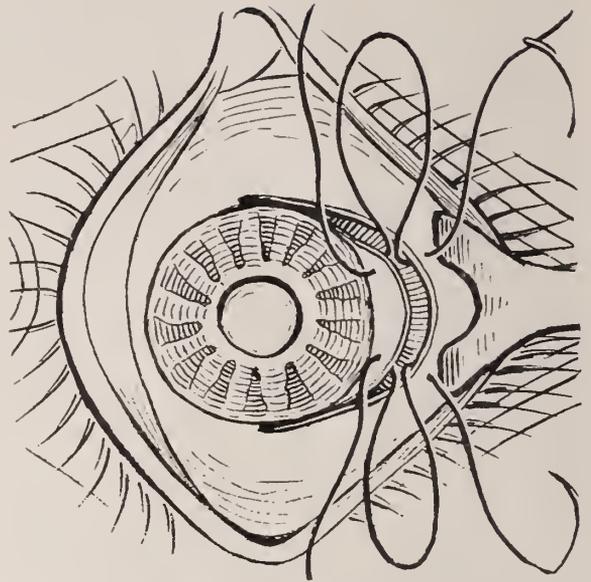


Fig. 5. Covering of Corneal Incision in Cataract Extraction (Van Lint). Method of placing sutures.

lenses the author has usually practiced this procedure.

There are certain advantages in closing a cataract incision by suturing. (1) The toilet of the anterior chamber may be more thoroughly and satisfactorily made, even after the sutures are fully tied. (2) There is lessened tendency of iris prolapse or loss of vitreous and, if either occurs, the vitreous usually returns into the eye and the prolapse is readily replaced without further loss of vitreous. (3) There is lessened tendency toward breaking open of the wound with loss of vitreous and iris prolapse after the patient has been returned from the operation room to his bed. (4) The resultant as-

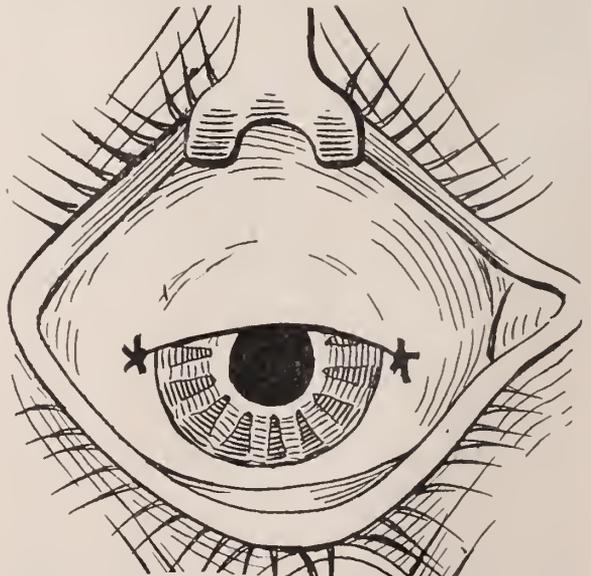


Fig. 6. Covering of Corneal Incision in Cataract Extraction (Van Lint). Completed operation.

tigmatism is less than where the wound is permitted to remain open or rather to coapt by itself. (5) The author feels that percentage of loss of vitreous and of iris prolapse is no more when the cataract is expressed in the capsule with the conjunctival stitch as a retainer than when the capsulotomy operation is done. While this has been a routine procedure with him for only three years, he thinks that sewing up of the eye after such major incisions is a safeguard against accidents occurring both during and after the operation.

A STUDY OF THE EUSTACHIAN TUBE  
WITH SPECIAL REFERENCE TO THE  
RECOGNITION AND PRESERVATION  
OF ITS DELICATE FUNCTIONS IN  
THE VENTILATION OF THE  
MIDDLE EAR\*

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Acute hearing becomes increasingly important as the years pass. To the savage man his world each day was the one which could reach him through his highly developed ability to hear. Pursuing or being pursued, his ear oftentimes told him what his eye could not reveal. In his dealings with his peers, the spoken voice was the little all which came to him. Within the space of the knowledge of many of us here, aside from the printed communication and the telegraph, our world was little more than his. Today through the sense of hearing, that world has grown infinitely larger. Any boy by his own hand may provide himself with apparatus by which he may hear almost half way around the globe. In commerce and industry as well as in the highly specialized professional callings, the value of a hearing ear has been enhanced many fold.

If a child is born with normal hearing, he will always hear normally, his life being the limit; there must be some legitimate pathologic lesion to deprive him of it. Otologists are the mentors and guardians for the hearing of the generation now beginning. Are we awake to the challenge of it?

In the literature I have not been able to find a statistic record of the causes of deafness. But considering the space used in our current scientific literature on the subject of acute and chronic diseases of the ear, observing the comparative numbers

attending our leading clinics, and checking the small list in my own work, I am convinced there are ten cases of middle ear deafness to one from all other causes combined. So, since we are to deal with the eustachian tube, I will refer only to that most important class, involving the middle ear.

In ears the list of dead and injured is bewildering. Physicians and the laity alike have the fatalistic conviction that deaf ears do not get well. This opinion has a basis in fact. The sufferer finds discouraged deaf folks all about him, and the physician says "they came too late." An ever increasing number are crowding our clinics, to whom we must paraphrase: "We will attempt to retard the process, and save what hearing you have. We will be more than pleased to improve it a little."

Twenty years ago, except in a few apparently accidental cases, tuberculosis was considered incurable. All when first seen were in the advanced stages and came too late. Today tuberculosis is known to be a curable disease; and giving credit to all the applied science which has made this possible, there is one requisite. The case must be treated—in its incipency. We will cure middle ear deafness, when by a long period of research and successful demonstration to a skeptical laity, diseased ears are treated "in their incipency."

The first stage of middle ear deafness involves its ventilation and occurs in the eustachian tube. Here, in our endeavors, we shall be confident of accomplishing most in our search for a cure.

Eustachius, in the sixteenth century, described the tube connecting the tympanic cavity with the nasopharynx. He believed that the tube was normally open. Up to 1853 the two cavities were generally considered to be continuous, and this was supposed to be necessary for perfect hearing. Toynbee, in 1853, definitely insisted that the pharyngeal orifice of the tube normally is closed, and that it is opened during deglutition to permit an inflow of air. He arrived at this conclusion from the experiment, which bears his name, of swallowing with both mouth and nose closed, which causes a feeling of tension of the tympanic membranes because of disturbed air pressure within the middle ear and tubes. If now the mouth and nose are opened, a return of normal balance should occur, if the tube be always open. No such change occurs, however, until a second swallowing movement is performed with the mouth and nose

\*Read before the Twelfth Annual Meeting of Pacific Coast Oto-Ophthalmological Society, Portland, Ore., July 11-12, 1924.

open; this is immediately accompanied by the relief of the pressure sensations, indicating that the tubes opened during the act to admit atmospheric air from the nasopharynx. Toynbee noted, further, the practice of the act of swallowing to relieve the inequality of pressure on the two sides of the ear-drum which occurs during the descent in the diving bell, as the pressure in the external auditory canal continually increases.

Cutter in 1867, on the contrary, first observing the eustachian orifice by means of the rhinoscope, states most positively that normally the tube orifice is open but that it closes during swallowing. Cleland mentioned the same in 1868. Rumbold, in 1873, says that "during the act of deglutition the tube is not an open passage," and many others have stated their beliefs pro and con. About the same date Politzer and Von Troltsch seemed to lead in the opinion that the tube was normally closed when at rest and opened during deglutition, but it was an opinion unverified and further conflicting experiments served to intensify the uncertainty. Little was done in the meantime (but the name of Politzer was handed down to us in the use of the inflation bag) until in 1920 it was proven by Dr. Rich, of the John Hopkins service, by vivisection on the living dog.

He demonstrated exactly what takes place in the mouth of the eustachian tube. These are his words, as he concludes his article in the Johns Hopkins Bulletin:

1. "Normally, the eustachian tubes are closed. They are opened during the swallowing, yawning and sneezing reflexes. Normally they are not opened by respiratory movements, either quiet or forced, and are unaffected by mouth breathing, or by simple elevation of the soft palate (produced by the contraction of the levatores palati alone).

2. "Although a most important function of the eustachian tube is the equalizing of the atmosphere on both sides of the tympanic membrane, the mere existence of a disturbed pressure equilibrium will bring about no regulatory reflex dilatation of the tube, either independently or through the swallowing reflex. Deglutition as a means of restoring the pressure equilibrium of the ear-drums, is performed, when necessary, consciously or through habit, but this reflex is never set in motion directly by the stimuli arising from the tension of the tympanic membrane.

3. "The levator palati, the palatopharyngeus, the internal pterygoid and the superior constrictor

muscle of the pharynx (each of which has been variously described as a dilator or constrictor muscle of the eustachian tube) were found to exert by their contractions no influence whatever upon the patency of the orifice or the lumen of the tube.

4. "The tensor palati is the only muscle which is functionally related to the eustachian tube. Contraction of that muscle is always accompanied by a dilatation of the tubal orifice and lumen. There exists no constrictor muscle of the tube. Relaxation of the tensor palati is followed by a passive return of the tubal walls to the condition of approximation which they normally occupy when at rest."

This scientific fact will be a starting point for helpful progress towards the relief of many cases of deafness, especially those beginning, in which ventilation is the prime factor.

In middle ear deafness of extreme and progressive degree, regardless of its later grosser lesions and the accompanying discomforts in the ear itself, there is large derangement of the drainage and ventilation function. These we have ample opportunity to study, for they come to us when they are deaf, in most instances too late. However, if you inquire carefully, the early subjective history will be such as these: "consciousness of movement in the ears when swallowing, a popping sound, a feeling of fullness, itching deep in the ears, slight ringing on exercise or coming into a heated room, or on exposure to cold, ears dull, with hearing all right part of the time, even slight pain at times more noticeable when they have a cold." All suggest disturbance of ventilation, the presence of pathogenic bacteria and a mild inflammation within the eustachian tube.

We know that in health the middle ear and mastoid antrum with its eustachian tube forms a closed cavity, lined with mucous membrane, the tubes ciliated in character, which encourages movement towards the throat. We know that it is sterile of pathogenic bacteria, as are the nasal sinuses. We know that the air contained therein is approximately the pressure of one atmosphere (for the elastic drum-membrane is maintained on a plane, with the air freely circulating without through the external auditory meatus). We know that this air is replaced from time to time, and that it is accomplished with no increase of pressure, for the nose is open. From Rich's experiment we know that this change is made during the act of

deglutition, usually, but it may be during yawning or sneezing.

We assume, first, that since this is a closed cavity, the air moves with a slight current and is replaced by a very small quantity at a time. We assume, second, with Rich, that there are no independent stimuli, brought about by change of tension on the drum-membrane which induces opening of the eustachian tube, but that deglutition is performed when necessary, consciously or through habit. We assume, third, that there is only sufficient mucous secretion to moisten the surface and lubricate the parts in contact at or near the orifice of the tube. We assume, fourth, that within normal limits, the presence of pure air of atmospheric pressure regulates this secretion. We assume, fifth, that pathogenic bacteria may normally enter the eustachian tube, but since the air changes slowly, they are deposited near their entrance and the ciliary action of the epithelium sweeps them out again. Sixth, can we assume, that in the presence of normal ventilation, pathogenic bacteria may be kept within physiologic boundaries, and that in disease by approximation of the normal ventilation process they will sooner be expelled?

We do not know the physiologic variation from normal atmospheric pressure in the middle ear, that so far has been beyond our ken. Politzer, in 1861, devised a monometer, fitted into the external auditory meatus, but beyond a slight movement of the fluid in the tube during deglutition nothing was accomplished. Bilanconi of Paris, in a paper January, 1923, recites an experiment conducted by himself, in which a small sound of three mm. diameter was introduced into the muscular opening of the eustachian tube, and the other extremity attached to a registering membrane. Attempts were made to register changes of pressure in the tympanic cavity during swallowing, inspiration and expiration without success.

I will, however, advance the statement that the variation is always below the pressure of one atmosphere.

Two conditions must operate as a constant factor in the movement of the air into the eustachian tube.

First, the temperature of the air in the pharynx is that of the inspired air, plus what heat is absorbed while passing through the nose, 70° F. plus. The air within the tube is the temperature of the body, 98 3/5° F. The warmer air is of less density.

Second, there is some absorption of the content of the air by the mucous membrane, demonstrated in the so-called "vacuum pain" in occluded frontal sinus; also in the constant renewal required to retain the tension in artificial pneumothorax, even where pure nitrogen gas is used. Absorption is accepted as the most active factor in the development of retraction of the drum-membrane. A respiratory function if you please. Cozzolino once called the eustachian tube "the bronchus of the ear."

Both processes operate to render the air in the eustachian tube, middle ear and antrum of lower density, so that when the mouth of the tube is opened, following the physical law of air, the heavier flows toward the lighter.

The eustachian tube, as the ventilator of the middle ear, serves it with its contained units in its capacity as conveyor of the elements of sound, by maintaining within a pressure no higher than that of one atmosphere, 14.7 pounds to the square inch. Also by so doing the health of every tissue involved is conserved in the presence of that pressure or less. Shall we not, then, conclude that in the presence of disease we will succeed more consistently, if we do not violate this process so important in health, and always attempt to establish ventilation of the middle ear, with pressure less than one atmosphere.

The delicacy of these physiologic functions must command our respect. The normal balance of air, which is that of the atmosphere, maintained within the tympanic cavity—that is middle ear health. This cannot be even slightly changed without upsetting the complex function of the entire hearing organ. And, if continued, it will bring about tissue changes and relationships which will go beyond the physiologic limits of repair. That is disease and potential deafness.

We have in the past considered the ear in health and in acute and chronic disease without due regard to these minutely functioning normal processes. We have lived out of doors. We closed one side of the nose with the finger and blew upon the ground, and our ears were safe. Now we give a child a handkerchief; he holds both sides of his nose tightly shut and blows; often inflammation results, and if it is enough to modify the action of the tensor-palati muscle in opening the tube sufficient for ventilation, and overcomes the action of the ciliated epithelium, middle ear involvement follows.

Have we not all at some time, when our ears have been a little stuffy, held the nose and forced the air up the tubes to open them? In the recent past physicians have advised their patients and even their friends to do so. Otologists have followed the teachings of their professors and been free with the Politzer bag and air pressure outfit. In terms of the laity they have "blown out their ears." In most cases there was a measure of relief. Can it be said that some foreign substance laden with bacteria was not forced in with the air, leaving the ear worse off? Was it from some other cause and in spite of forcing air into the tube that a measure of relief was obtained?

Some years ago I became quizzical about the use of the Politzer bag. I began to cast about for some other way. It occurred to me that, if the eustachian tube were to be opened with force, it should be in the process of drawing the air out. Mechanical suction was tried, but was ineffective. Then I found by closing the nose and swallowing I could accomplish a movement similar to that which I sometimes felt in swallowing, except that there was pressure in my ears, and that by swallowing again it was relieved. That was before I had read of the same experiment performed by Toynbee in 1853. Some five years ago I began substituting this means of ventilation for inflation, and soon was using it entirely, both in diagnosis and treatment.

The most interesting results have been with acute diseases of the middle ear. As typical, I will recite to you four out of eight successful cases which I saw between April 12 and May 12, 1924.

April 12, P. S., boy age 5. I had done paracentesis of left ear two years prior for middle ear abscess. I had advised removal of diseased tonsils and adenoids at that time but this had not been done. I was called at 7 p. m. The child was crying with pain in left ear since 2 p. m. No history of cold but pharynx and tonsillar area congested; temperature  $99\frac{3}{4}^{\circ}$  F. Drum-membrane bluish red and slightly bulging; heard watch at one inch. Not having ice (the eating of which I advise for reducing the congestion in the fauces and lower pharynx), I had him sip cold water for a time, then induced him to swallow several times with nose closed. The child became quiet. I advised ice instead of water, and a repetition of the treatment each hour. A laxative was prescribed. The report next morning was a good night. No more pain.

April 26, D. C., boy 8. Tonsils and adenoids removed. History of cold in head or flu for five days with fever, discharge from the nose profuse, and he blew it vigorously often. Pain for two nights now almost continuous. Temperature  $101^{\circ}$  F.; nasal mucous membrane, nasopharynx and throat congested. Drum-membrane thickened, blue and bulging. Heard watch at one half inch. A case for paracentesis. I made application of cocain 5 per cent with epinephrin to nasopharynx. Then I waited ten minutes

and held the nose while he swallowed several times. Had him stay one-half hour and he was easier. I advised the ice and inducement of artificial ventilation every hour with rest in bed and prescribed Calopen to mild purgation. The ear was relieved and recovered without abscess.

May 1, D. M., age 22. Seen at office. Had had middle ear abscess of left ear four times before. Said it would pain him for twenty-four hours or more before breaking and then run for two or three weeks. Present history. Acute coryza; had blown nose vigorously and had felt pressure in ear. Had had pain for twelve hours; now it was continuous and dull. Temperature was  $100^{\circ}$  F.; heard watch on contact; drum bulging in interior one-half. A contraction of lower posterior quadrant suggested a cicatrix; the drum highly congested. This was a case for paracentesis. I applied cocain-epinephrin solution to the eustachian orifice and waited ten minutes. He then swallowed three times with nose closed and twice open. There was some relief. I advised the ice and artificial ventilation hourly, with rest in bed. The report next morning was better and hearing returning. There is no recurrence to date.

May 2, Baby B., six months old. Was referred by Dr. J. B. Bilderbach, Portland, with the notation "left drum-membrane bulging." I saw the patient at 7 p. m. There was a history of active bronchitis for four days; temperature  $102^{\circ}$  F.; had slept little for the last two nights and days; was putting hand to left side of head frequently. The drum was bulging. I advised the mother to attempt artificial ventilation at nursing time and report to me if necessary. The child had passed a good night and bulging of the drum-membrane was relieved. There was no return.

Theoretically, by closing the nose and performing the act of deglutition, the air in the throat is moved down the eustachian tube out of a closed cavity, so that when the orifice closes the air left behind is of less density.

In my prognosis in cases of chronic middle ear deafness, which may be the first sitting or after removal of nasal and throat disabilities, this means of ventilation serves the same purpose as inflation formerly did. Between treatments my patients are able to bring about ventilation themselves, swallowing twice with nose closed, and again without, and I advise them to do so frequently.

I had not kept detailed records before using this method of ventilation, so that satisfactory comparison might be made, and I may be more careful and more expert in the other details than formerly, but my cases are improving more rapidly and requiring less time to reach the limit of their possible return.

Most satisfactory results have been obtained in earache, seen early. I advise the eating of several small pieces of ice, to reduce the congestion in the throat, then within five minutes swallow several times with the nose closed, and repeat in half an hour. If the drum indicates pressure within the middle ear, and relief is not very soon obtained,

paracentesis is done. In children this procedure has been effective in almost every case used. I have enlisted several of my colleagues doing general practice, for they see these cases first, and they report success.

In my middle ear drainage cases I have my patients do the same. I consider that with the drum-membrane perforate a mild suction toward the throat is produced. In health little is demanded of the tube but ventilation; in disease there is added drainage which a forced drawing of the air down the tube may aid. I am sure I get results in this. I use wick drainage, changed before complete saturation. One of my patients rescued quite a long thread from her throat which had found its way down from the middle ear.

The air might be sucked down the throat to the same purpose, but the force might be excessive, and children could not be instructed how to do it. They all swallow. However, I am convinced that a mild retraction of the drum-membrane for a short period is not hurtful. Frequently children are referred to us, having a history of deafness for weeks, hearing the watch an inch or less, and the drum-membrane retracted to an extreme degree. The nasopharynx and throat are cleared of diseased tissue, and treatment instituted with complete recovery of normal hearing.

The citadel of the middle ear is to be the battle ground in our campaign against deafness. We are sure the enemy is constantly laying siege by obstructing the air supply at its source in the mouth of the eustachian tube. We will be able to repel him by maintaining or quickly regaining an air pressure equilibrium near to one atmosphere.

#### CONCLUSION

1. In health ventilation of the middle ear is accomplished by the replacement of air below the pressure of one atmosphere.

2. Middle ear deafness is a curable disease when treated "in its incipiency."

3. Disturbed ventilation, the result of inflammation at the proximal end of the eustachian tube, caused by the excursion of pathogenic bacteria beyond normal limits, may often induce subjective symptoms before actual involvement of the middle ear.

4. Artificial ventilation may be applied and be effective in equalizing the air pressure and drainage of the tube.

5. Artificial ventilation can be done without menace of added infection, only by drawing air

down the tube. The density of the air in the cavity is reduced and a normal replacement of air is made possible on opening the tube.

6. The simple method of performing the act of deglutition with nose closed, operates safely below the normal atmospheric pressure and is effective for ventilation and drainage in acute and chronic diseases of the middle ear.

### ANALYSIS AND CORRECTION OF HEARING DEFECTS\*

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From the standpoint of the practicing otolaryngologist, auditory studies serve two particular purposes: diagnosis and treatment. In this paper, therefore, we will divide our remarks into the two headings: analysis and correction.

#### ANALYSIS OF HEARING DEFECTS

The analysis of the hearing defect of any given individual involves the determination of (1) the type of deafness, and (2) the degree of deafness.

Types of deafness might be classified as follows:

- (A) Conductive,
  - (a) Obstructive or
  - (b) Fixative.
- (B) Perceptive.

Any case of hearing impairment may be classified under one of these two main headings, conductive or perceptive. Such a classification would seem a convenient one, because we can regard lesions of the external and middle ear as conductive, and lesions of the internal ear and intracranial connections as perceptive. Further, it would seem convenient to subdivide the conductive into obstructive and fixative; "obstructive," indicating lesions of the external ear which close the auditory canal, and "fixative," indicating lesions of the drum-membrane and lesions within the middle ear.

According to this classification, "obstructive" would include the following: Atresia, congenital or acquired, of the external auditory canal. Impacted cerumen. Acute inflammatory conditions involving the skin of the external canal, such as diffuse or localized furuncle. Complete obstruction of the external canal by exfoliation of the skin in chronic

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conditions, such as dry or moist eczema. Fungus, such as the aspergillus. Foreign bodies occluding the external canal. All such lesions produce deafness of the obstructive type.

It seemed to the writers that the term "fixative" might be applied to lesions of the conductive mechanism that interfere with the transmission of wave-impulses through the middle ear. These lesions tend to impede the oscillatory response of one or more of the component parts of the transmitting mechanism. Any lesion which tends to interfere with or "fix" any of these transmitting structures might be classified under the general heading of "fixative" impairments. For example, thickening of the drum-membrane causes it to become more or less stiff and unyielding, thereby causing a fixation of one member of the conductive apparatus. The transmission of sound waves strictly concerns the movable structures—the drum-membrane, the ossicular chain and the membranes of the oval and round windows. Their mobility is disturbed or more or less "fixed" by any condition producing definite vacuum or pressure within the middle ear; the accumulation of serum or pus within the middle ear; chronic fibrous or interstitial changes involving the drum-membrane, the ossicular chain or the muscles of the drum-membrane or stapes; arthritis of the joints of the ossicular chain; or fixation of the stapes in the oval window, either by fibrous or bony overgrowth. Inasmuch as the insertion of the stapes is the most vital portion of the ossicular chain, such a fixation produces a greater impairment of hearing than any other lesion of this type.

We will now consider the practical problem of the individual patient. One wishes to make an analysis of the hearing defect, to determine the type of the defect and to classify it, and, if possible, to accomplish this in a manner that is accurate and yet not occupying an undue amount of time. With this in mind, the writers designed an instrument, the "Audio-Amplifier." We will consider how this instrument is used in making an analysis of a hearing defect, according to the classification we have just outlined.

The amplifier portion of the instrument permits of a rapid and yet fairly accurate determination of the hearing defect. It consists of a two-stage amplifier and a correction-circuit. The type and the degree of the hearing defect can be determined in about one minute. The amplifier overcomes a conductive impairment, whether obstructive or fixative. In an obstructive lesion the patient hears

best with uniform amplification. With a fixative impairment the patient hears best with low-pass amplification, i.e. amplification of the low tones, less amplification of the higher tones, and no amplification of the highest tones.

In general, if the patient hears well with amplification, it signifies a conductive impairment. If, on the other hand, the deaf patient does not hear well with amplification, it signifies perceptive deafness. If the patient does not hear better with low-pass amplification but does hear somewhat better with high-pass amplification, it signifies a slight perceptive impairment. The degree of the hearing defect is read off on the dial of a "volume-control."

The same apparatus may then be used as an audiometer, for producing tones. One vacuum-tube produces electric oscillations and the other amplifies them. Tones are produced from 64 d.v. up to and beyond the range of audibility. Each tone can be reduced to the point at which it cannot be heard, by the same volume-control. This portion of the instrument follows the general design of the audiometers, developed by research engineers of the Western Electric Company and by other physicists.

The bone-conduction is then quickly tested by a special device. Oscillations of any desired frequency are communicated to a metal rod. This rod is placed against the mastoid and by means of the same volume-control, one makes a reading of the acuity by bone-conduction. It is not necessary to make any "comparison with the normal"; the normal is already established, just as the 98%° on a temperature chart. In this way one makes a precise measurement of the relation of bone-conduction to air-conduction and on the relation of bone-conduction to normal.

In conducting any of the above tests there is a noise-apparatus as a part of the instrument which can exclude the ear not being tested. This noise-apparatus can be used in association with any of the above tests, whether by the amplifier, the audiometer or the bone-conduction tests.

By the above tests one has determined the nature or type of the hearing defect and also the degree of the hearing defect.

#### CORRECTION OF HEARING DEFECTS

In this paper we shall not discuss the usual procedures of surgery or local treatment for correcting hearing defects. We shall limit ourselves

to consideration of those patients who are so deaf as to require an artificial aid to hearing.

From the standpoint of the science of acoustics the ear is a physical instrument. The science of acoustics has not been developed to the same extent as the science of optics. For many years the science of optics has attracted many investigators and much accurate work has been done by physicists, physiologists and ophthalmologists in the study of the eye as a physical organ. Most of the defects of the refractive mechanism of the eye are well understood and are now capable of precise measurement and correction. The precise science of optics makes possible the prescribing and construction of lenses to correct each gradation of the refractive error. The correction of visual defects usually involves changes of focal length; it does not involve the matter of amplification of the intensity of light. The eye responds to wave-lengths that are infinitesimal in size. This makes possible the use of small lenses. Astigmatic and aberration corrections can be accomplished by very small changes in the contour of the lens.

The ear, on the other hand, regarded as a physical instrument, presents many unsolved difficulties. All devices which have been invented for amplifying sound introduce distortions. These distortions, whether caused by a horn or a diaphragm, cause an over-emphasis of certain tones. Such instruments, therefore, distort the physical characteristics of sound or music.

These differences in the development of optics and acoustics are manifested in the artificial aids for correcting visual and auditory defects. Lenses are the outgrowth of a highly developed precise science. On the contrary, artificial aids to hearing have been developed largely in a haphazard attempt to magnify sound. The attempt has been to bombard the ear with louder sounds. Many varieties of instruments have been made for the single purpose of amplifying sound. These instruments have been made without the knowledge of the particular defect that they were made to correct. This emphasizes the sharp distinction between the present method of correcting visual and auditory defects. Some instruments made for correcting auditory defects have unquestionably served a very useful purpose in alleviating many serious defects of hearing. In many cases of deafness of the conductive type, mere amplification is frequently helpful, even though distortions are introduced. How-

ever, the development of acoustics in recent years affords a brighter prospect in the designing of artificial aids to hearing.

The available instruments used as artificial aids to hearing may be classified under four general types: (1) trumpets or horns, (2) sound-traps or constrictions, (3) microphones and (4) vacuum-tube amplifiers.

The horn or trumpet is the most primitive type. There are two physical principles involved in the use of the horn. It acts as an amplifier because the outer end of the horn can collect a greater amount of sound energy than the ear, unaided. Again, the horn acts as a resonator, like an organ-pipe. For a long time it was thought that, if the opening at the big end of the horn were a hundred times larger than the opening at the small end, one might expect an amplification of one hundred fold. Such an amplification, however, is not realized. Much of the sound energy is lost by reflections from the sides of the horn; also the different components of the sound interfere with each other. The amplification is, therefore, much less than one hundred fold. Because the horn acts as a resonator, distortion is introduced. This distortion produces a "tinny" or metallic quality to the sound.

The sound-trap type of instrument consists of the sound collector, in the form of a small horn, and a small constriction. The theory on which this was constructed is that, after the sound has entered, the constriction prevents the sound from coming out again. Experiments on the amplifying power of such an instrument show that it does not amplify for tones of any frequency. Such an instrument, therefore, is worse than useless.

Of all the artificial aids to hearing, the microphone type has met with most success. The microphone is essentially a telephone. It consists of a transmitter and a receiver. By means of the transmitter the acoustic energy of the sound vibrations is converted into electric energy and this electric energy is reconverted into acoustic energy by means of the diaphragm in the receiver. In this way a certain amount of amplification is produced. However, this amplification is limited to a narrow band of frequency, which corresponds to the natural frequency of the diaphragm, whereas all the other frequencies are given slight or no amplification. Consequently, though the microphone does amplify, it amplifies certain tones within a nar-

row range of pitch. This produces a serious distortion. In certain types of deafness, however, it may approximate the type of amplification required.

The first artificial aid to use the audion-bulb was the Vactuphone. The Vactuphone possesses the characteristics of the microphone and, in addition, produces a uniform amplification of all tones. It is, therefore, capable of producing a greater amplification than any of the above mentioned instruments. There are two inadequacies in the Vactuphone. There is the distortion introduced by the diaphragm in the transmitter and the receiver. Also it is limited to uniform amplification.

It seemed to the writers that an artificial aid to hearing should be designed to meet the precise needs of each individual patient. If, in testing the patient, we find that the defect is largely conductive, and that the patient is so deaf that an artificial aid is desirable, we construct an artificial aid which we have termed the "Magnaphone." The essential feature is selective amplification. Those tones which need amplification are amplified. Those tones which need no amplification are not amplified. Experience reveals that many patients who require low-pass or high-pass amplification actually hear as well with uniform amplification. The explanation of this would seem to be psychologic: the cerebral interpretation has been on the basis of impulses from a defective endorgan. The attempt should be made to send in normal impulses. The specifications of an instrument for providing these normal impulses are determined by measurements made with the Audio-Amplifier.

The magnaphone consists of a two-stage speech amplifier. By introducing between the two stages of the amplifier appropriate electric circuits, known as correction-circuits, one can obtain the type of amplification required for the individual patient.

To illustrate, a magnaphone was made to meet the needs of an old lady. She heard well with it. An old gentleman with an equal degree of deafness then asked if he might try it. He could not hear with it. The reason was obvious. The lady needed amplification for the low tones and no amplification for the high tones. The man needed amplification for the high tones and only slight amplification for the low tones. In other words, these two patients had different types of deafness. The first, conductive, and the second, perceptive. It is of interest to note that, if these two patients had applied to some commercial house for an arti-

ficial aid to hearing, they would have received the same type of instrument.

The magnaphone for women is put in a vanity case. This vanity case holds the entire apparatus with the exception of the receiver for attachment to the ear. For men the magnaphone can be distributed in a jacket, to be worn under the coat like a vest.

There is one feature of interest and of a very practical nature. If the patient is considering having a magnaphone constructed for personal use, he can determine, at least in an approximate way, whether such a magnaphone will be satisfactory. By using the amplifier portion of the Audio-Amplifier, one can converse with the patient with uniform amplification, low-pass amplification or high-pass amplification, as the case may require, and the patient then knows whether he does or does not hear well with this type of apparatus, before it is made.

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### MASTOID SURGERY\*

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Because of the many different operative procedures devised for acute and chronic suppuration of the mastoid process, it might be in keeping to tell you what I have been doing for some ten years past. Various operations have been tried; different dressings as well as the technic of the operations.

Probably the individual surgeon will have better success with his own technic. There are many ways in which failure can come. So when I go into detail with you, it is absolutely necessary for you to carry out in detail everything that I may say. A part cannot be selected and another discarded, for I am going to make some very striking statements and, in a way, hold myself responsible for your performance, provided you fulfill the instructions.

To make this a little more striking, I am going to say I never lost a case following the acute mastoid operation. For a period of fifteen years, I had city and county hospital service as well as a clinic of my own. I tell you this to show that many times my cases were not selected by myself,

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but were forced upon me because of the position I occupied.

After I had been operating about five years without a death, a peculiar mental condition obsessed me; it was this—that the next case will surely be the one. This obsession grew and grew, until I was almost afraid to proceed. However, I became more and more confident that there was something in my surgical technic that was not commonly practiced, and it is what I believe today.

This alone is not the entire story. For we must take our patients as we find them. So to begin with, having an acute otitis with temperature, tenderness and increased white count, following an incision of the drum membrane with increasing difficulties and a decided bulging of the posterior, superior wall (which I think the most reliable symptom of all), something must be done to relieve the pent-up pus. The interval that may be covered by such a process of reasoning is from three days to two weeks.

If at the end of two weeks or later, there is a pulsation of the pus through the perforation, without any other symptoms, you may be perfectly sure that you will find pus in the mastoid. If at the end of two weeks or later, you find bulging of the posterior, superior wall with no other symptom whatsoever, you can be assured of finding your mastoid full of pus.

Facial paralysis is always an indication for immediate operation during the course of an acute otitis. There are many other conditions that are quite familiar to all ear surgeons that should be considered as clear indications for operative interference.

Another condition stands out alone, which I consider very important indeed. In fact, I was the first to call attention to this in the meeting of the American Medical Association fifteen years ago. It is that an acute otitis should not be allowed to exist for a period of more than six weeks, because the hearing is so likely to be impaired or a permanent perforation remains that will be an annoyance for the balance of the individual's life.

I think it almost criminal negligence to allow an acute otitis to become chronic and I believe the time will come when medical authorities will consider it so. If you are a trifle uneasy about doing an unnecessary operation, just bear this in

mind, that a good surgeon will not damage a healthy ear, but by delay, every now and then, one will slip away from you.

The indications for the acute mastoid operation are based largely upon the clinical symptoms and history, coupled with a few definite findings. A given case of acute mastoiditis must improve from day to day, or it is safer to interfere with it in a surgical way. This holds good any time from the third day until the fourteenth; after that it will fall into another class, to be measured in another way, with more or less definite indications.

My technic for the acute mastoid operation is based upon the removal of every individual cell. Every cell that can be found with an instrument I call a searcher (not as large as the head of a pin) is removed, cell after cell, until hard bone is encountered everywhere. The attic is opened freely and all the cancellous bone removed from this area.

When every individual cell has been removed with a hand burr, chisel, or any instrument you may wish, the cavity is packed with plain gauze; ear packed with plain gauze; a few stitches at the angle; bandaged. Ice-cap to operated ear for twenty-four hours. Wound dressed in four days, providing everything remains satisfactory.

Should you have temperature following an operation such as I have described, one of three conditions is present in order of frequency: (1) remaining cells carrying infection, (2) beginning of an acute infectious disease, (3) cerebral complication, the most frequent of which is thrombus of the lateral sinus.

At this time it will be found that the discharge from the ear has ceased entirely. Loose packing is reinserted in the ear. Gauze is removed from the wound and loose gauze is inserted; gauze fluff and bandaged for two days, when the second dressing is done. The wound is dressed every second day so long as it remains free from pus. As soon as pus appears, it is dressed daily until it is again free from pus. In the event of oversized granulations, they are removed with a small curet, or cut down with nitrate of silver fused upon a probe and the silver neutralized with salt solution. If granulations fail to develop, a tight pack of iodoform gauze is inserted; change daily until they are normal and then dress with plain gauze.

I wish to say that for the past ten years it has not been necessary to reoperate on a single individ-

ual case.\* This speaks for itself. My series of acute mastoid operations is about 400.

The radical mastoid operation, I believe, has come to stay. I do not see how it can be improved upon. However, I do believe that every case of chronic suppuration of the middle ear (chronic after one year), especially in children, should have the radical mastoid operation.

Some ten years ago I did the acute mastoid operation in a series of twelve cases with chronic suppuration of the middle ear. Many cases were excluded. The only cases that were accepted were free from vertigo, tinnitus, headache, cholesteatoma, facial paralysis; free from disease of the promontory or attic wall. In this series all recovered but one and it was found at the second operation that he had cholesteatoma. This must have been overlooked at my examination and at operation, or it was so small at the time that it was not seen. Ever since that time I have been using the same reasoning in deciding the kind of operative procedure in given cases for children (up to twelve years of age).

With the advent of the different operations for chronic suppuration of the middle ear, I have been impressed with the results and I am not so sure that in your carefully selected cases, such as I have spoken of before in children, some cases in adults might be brought to a successful issue also. The reason I have not run a series of cases this way is because I gave up my clinical work some five years ago and have not had sufficient confidence in it to do such a procedure in private cases. However, I believe that the different operations for chronic suppuration will be selected and differentiated as clearly in the near future as we today differentiate between the acute and the radical mastoid operations.

When we differentiate between different operative measures for the cure of chronic suppuration of the middle ear, some few lesions stand alone and cannot be cured by any other procedure than the radical mastoid operation. I will enumerate such conditions as follows: cholesteatoma, facial paralysis, caries of the promontory, caries of the attic wall inside or outside, vertigo or any cerebral or cerebellar symptoms.

The operation must be selected that removes the lesion. Nothing short of that will suffice.

This is what I believe will become the accepted condition governing operative procedure for chronic suppuration of the middle ear. Furthermore, I expect to see the gradual disappearance of chronic suppuration of the middle ear by the improvements that have been brought about in the preliminary care of acute otitis and mastoiditis.

I am not going to enter into a discussion as to the indications for the radical mastoid operation, because we have specific indications established by most of the textbooks of otology. The only cases to quarrel about are those in which a specific indication does not exist.

The only case warranting disagreement are those in which a specific indication does not exist. I refer to the cases that have a chronic discharge from the ear and do not have any other symptoms or demonstrable lesions. Some of these patients are cured by treatment, but they do not remain cured. Probably 5 per cent of the cases cured without operation remain well. So after trying for a short time to bring about a successful issue, I am ready to recommend the radical mastoid operation, or one of the surgical measures for the cure of chronic suppuration. For these patients (who comprise the great majority) have been very satisfactory in every way. Among this class of patients, I have never had one regret the operation.

Today I am more enthusiastic about the radical mastoid operation than ever before. During the last ten years I have reoperated on but one of my own cases. This case did not recover and finally left me. I do not believe I have a single other case that was not cured. However, a case that has had a radical mastoid operation needs attention for all time to come (three or four times a year). If this is not attended to, trouble will follow and, if neglected too long, will require reoperation to bring to a successful issue.

I am more enthusiastic than ever about the skin-graft described in my monograph some ten years ago. The last case was cured in thirty days. By the use of the graft the whole of the after-treatment is very much simplified, the hearing is better and they make a much quicker recovery. It may be possible that the resistance to debris is not so good. However, it is a question. I have lost four cases in a series of approximately 600, one from brain abscess and three from purulent meningitis.

210 Post Street.

\*During the time that this paper has been in the course of preparation, I have had to reoperate on a very complicated case.

## THE SIGNIFICANCE OF BACTEREMIA FOLLOWING MASTOID OPERATIONS\*

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The importance of this topic was first impressed upon me by consideration of suspected cases of lateral sinus thrombosis following mastoidectomy. Illustrative of this the following cases are cited:

### SUSPECTED LATERAL SINUS THROMBOSIS FOLLOWING MASTOIDECTOMY. STREPTOCOCCEMIA.; RECOVERY WITHOUT OPERATION.

Case 1. Master F. B., aged 11 years. Seen in bed at Seattle Emergency Hospital, September 3, 1919. Right ear has discharged at intervals since age of three years. Discharging now for four months. Four days ago noted pain and tenderness back of ear. This has increased.

Patient quite ill. Temperature 101° to 103°. Very large perforation in membrana tympani, involving all but anterosuperior quadrant. Pulsating discharge, marked by tenderness and slight edema over mastoid. Skiagram shows sclerosed mastoid. W.b.c. 18,000, polys 68 per cent, monos 32 per cent. Tonsils large and infected. Examination otherwise negative.

As patient did not improve, right radical mastoidectomy was done September 4. Very thick cortex. Mastoid cavity about one centimeter in diameter. Cells filled with pus and granulation. Lateral sinus exposed over area 2x3 mm., appears normal. Plastic flap. Closure. Cavity packed with plain gauze. Culture from mastoid reported staphylo- and streptococci.

Packing changed on fifth day and each day thereafter. During first five days temperature ranged from 99° to 101°. September 10, temperature 103°, pulse 130, with moderate chill lasting twenty minutes. Blood culture reported streptococci, w.b.c. 14,000, polys 72, monos 28. For next three days temperature ranged from 99° to 103°, going sharply up and down, no chills. Patient does not appear extremely ill. General examination negative. Blood culture September 12: Streptococci, w.b.c. 12,000, polys 73 per cent, monos 27 per cent.

September 14 and 15, highest temperature 101°. September 16, highest temperature 100°.

Following this patient had uneventful convalescence and is now well.

Case 2. Master H. W., aged 4 years. Referred by Dr. E. P. Fick, May 12, 1923. Called to patient's home. Left acute suppurative otitis media with bulging drum. Temperature 102°, pulse 120. Paracentesis followed by profuse purulent discharge. Culture showed long chain streptococcus.

Temperature remained about 102°, patient very restless. On May 15 developed typical subperiosteal abscess over left mastoid. Consultation by Dr. A. T. Wanamaker. Sent to Swedish Hospital. Urine negative. White blood count 11,200.

Left simple mastoidectomy was done at 6 p. m. that day. The mastoid cavity was large, pus present in all cells, and lateral sinus was exposed by necrosis for area of 4x6 mm. Wound lightly packed with plain gauze. Partial closure. Culture from mastoid cavity reported long chain streptococcus.

Usual convalescence after operation. Temperature normal on fifth day and patient feeling quite well. Dressing changed on fourth day and each day thereafter. Considerable thin purulent discharge with

some excoriation of skin. Patient sent home May 22, one week after operation.

That night temperature rose to 104° and remained between and 103° and 105° for two days. Returned to hospital May 25. Urine 100 degrees acid, otherwise negative. Blood culture showed long chain streptococcus which later had a distinct capsule (streptococcus mucosus). White blood count 18,300, polys 81 per cent, monos 19 per cent.

General examination by Dr. C. W. Sharples was negative. He advised reopening the mastoid wound. Consultation by Dr. Wanamaker, who agreed with me that we should give the patient large quantities of alkaline fluids and, if no improvement, to operate within a day or two.

Next day, May 25, temperature rose to only 101°, May 26, highest temperature 102.6°, May 27, highest temperature 101°, May 28, highest temperature 100°. During this time general condition of patient improved rapidly, although the temperature curve was typically septic, going sharply up and down each day.

Tonsillectomy and adenoidectomy done May 31. Patient seen at intervals of one month since that time. Hearing is normal and general health is excellent.

In this type of case we have an individual usually extremely ill and just recovering from a serious operative procedure. The diagnosis of the complication and the surgical indications according to many otologists rest largely upon the presence or absence of bacteremia. An operation upon the lateral sinus and internal jugular with a patient already extremely ill is a grave risk. Also the cervical scar and the obliteration of the internal jugular vein of that side are, to say the least, not to be desired.

Three questions arise: (1) Is bacteremia uncommon following mastoidectomy? (2) Do bacteremia and septic temperature following mastoidectomy indicate positively a lateral sinus thrombosis? (3) Do bacteremia and septic temperatures following mastoidectomy necessitate an operation upon the lateral sinus and internal jugular vein?

Considering question 1. We seem to have but little evidence on this subject. The reason for this is easily found. If a mastoidectomy is done with an uneventful convalescence, no blood culture is taken. If the patient runs a high fever or appears septic, then blood cultures are taken. Therefore, the data concerning cases of postoperative bacteremia have been gathered largely from cases with an abnormal postoperative course. It is not at all improbable that many uneventful operative cases at some time during recovery have a bacteremia of which we know nothing. It is possible, therefore, that we become unduly alarmed upon discovering the presence of postoperative bacteremia.

Consider from the standpoint of possible bacteremia an operation such as mastoidectomy. In the area about an active inflammatory process, capil-

\*Read before the Twelfth Annual Meeting of Pacific Coast Oto-Ophthalmological Society, Portland, Ore., July 11-12, 1924.

laries and small veins are often thrombosed and many of these thrombi are doubtless infected. The jarring, incident to the use of chisel or burr, might well loosen up these small infected thrombi, thus giving rise to at least a temporary bacteremia. During the operation blood vessels are opened up which might well allow the entrance of virulent organisms present.

We know from animal experimentation<sup>1</sup> that bacteria of moderate virulence injected into the veins of a healthy animal quickly disappear from the circulation. It is likely that the ordinary human individual has many similar experiences, in which pathogenic organisms enter the circulation and are quickly destroyed.

Giami's work<sup>5</sup> on the formation and resistance of the leucocytic zone is of interest in connection with these cases. He soaked filter paper with a culture of anthrax bacilli and laid the paper on fresh wounds 2, 6, 8, 10 and 14 hours after division of the tissues. On the 2-hour wounds two-thirds of the animals died. On 14-hour wounds all recovered. We see, therefore, that the possibility of bacteremia from absorption exists where the leucocytic zone is broken. This occurs at operation and also at subsequent dressings.

Duel and Wright<sup>13</sup>, in 1909, report from the Manhattan Eye, Ear and Throat Hospital the results of blood cultures from 55 cases of otitic disease. There was bacteremia present in 15 cases. Four of these patients had definite clinical signs of lateral sinus thrombosis, for which jugular ligation was performed. In two of these a thrombus was found; in two no thrombus could be demonstrated. One patient had acute labyrinthitis and leptomenigitis.

The remaining nine cases of bacteremia had mastoiditis without complications and after mastoidectomy had an uneventful convalescence. These authors also report on the service of Dr. McKernon four cases of bacteremia in simple mastoiditis, in which there was no clinical evidence of sinus involvement. All recovered after mastoid operation. Similar reports usually of isolated cases are available in the literature, where simple otitis media and mastoiditis are accompanied by bacteremia with complete recovery after mastoidectomy.

Libman<sup>7</sup>, whose wide experience with these cases compels respect for his conclusions, states that in no case of otitic disease without complication was bacteremia demonstrated. This is in accord with the findings of Hays<sup>12</sup> and Oppenheimer<sup>11</sup> of this

country and of Leutert<sup>11</sup>, Kobrak and Neurnberg of Europe. However, in these series of cases many are classified as lateral sinus thrombosis (as opposed to simple mastoiditis), in which there was bacteremia and septic temperature followed by recovery after ligation of jugular and opening of sinus, even though no thrombus could be demonstrated at time of operation.

What justifies in such a case the diagnosis of septic sinus thrombosis? Bearing in mind the extremely large number of undisputed spontaneous recoveries in similar cases, it is not probable that most of these cases that did recover after sinus operation, would have recovered had no operation been performed? We believe that the diagnosis of sinus thrombosis in such a case is not warranted.

In bacteremia associated with otitic disease one must bear in mind the possibility of the bacteremia being due to some other cause. Especially to be thought of are scarlet fever, typhoid, acute endocarditis, and the anginas. A positive blood culture taken a few hours after any operation or in the prelethal stage is of no significance.

Considering question 2. Do bacteremia and septic temperature following mastoidectomy indicate positively a lateral sinus thrombosis? We believe it does not. The previous paragraphs have unavoidably dealt somewhat with this subject. In the experience of every otologist such cases have occurred where no thrombus could be demonstrated at operation. Many of these patients without operation recover more quickly than would be expected were an infected clot present within the blood stream. In obstetric practice<sup>4</sup> 70 per cent of the cases of intrapartum fever show a genuine but temporary bacteremia. Nearly all of these cases recover and are believed to be due to absorption of toxins and bacteria through the broken placental surface. They present fever and bacteremia. Similarly many cases of postmastoidectomy fever and bacteremia may be due to absorption and not to thrombus formation.

Quoting from Duel<sup>15</sup>, "To look upon bacteremia alone in suppurative otitis media or mastoiditis as indicative of septic sinus thrombosis is unwarranted." Richardson<sup>15</sup> states, "Whether a bacteremia is always indicative of septic sinus thrombosis is a question subject to considerable dispute."

We could easily fill pages with quotations on this question both for and against. Suffice it to say that the answer is not to be arrived at by quoting from authority. From a practical clinical standpoint we can state that a persistent bacteremia, fol-

lowing mastoidectomy without other discoverable origin, must be assumed to result from the entrance of organisms into the lateral sinus whether thrombus formation is present or not.

Considering question 3. Do bacteremia and septic temperature following mastoidectomy necessitate an operation upon the lateral sinus and internal jugular vein? From one text to another seems to have been copied a statement about as follows: "If after mastoidectomy there occurs high temperature, going sharply up and down, chills, and bacteremia, it is advisable to open the lateral sinus and to ligate or excise the internal jugular vein of that side." There is accumulating, however, in case reports a vast amount of evidence that these patients not infrequently recover spontaneously. Phillips<sup>9</sup> mentions the finding of naturally obliterated lateral sinuses in cadavers. He states also, "It is a fact that these cases often recover spontaneously and a blood transfusion may well be administered in every case, whether the sinus is operated on or not." Martin writes,<sup>1</sup> "It must be strongly emphasized that it is not necessary to be too hopeless when pathogenic germs are found in the circulating blood."

Quoting from Shambaugh,<sup>14</sup> "The mere fact that a vein is thrombosed is not in itself an indication that the situation cannot get along without an operation on the vein. This we see in the thrombus occurring after childbirth and undoubtedly occurs much more frequently than we know of in connection with suppurative otitis media. It seems to me that otologists are likely to adopt the most radical treatment for all cases of sinus thrombosis. I am inclined to think that the danger of doing too much may be as great as the danger of not doing enough."

Taking an impartial view of the situation, it seems certain that many cases of lateral sinus thrombosis have been reported as cured by operation which would have recovered spontaneously. It is probable too that many patients have died from operations for lateral sinus thrombosis who would have recovered without operation. However, we do know that a persistent bacteremia usually means that organisms are being constantly fed into the circulation. We know also that the body has agencies<sup>3</sup> (chiefly the lungs and liver) for destroying organisms within the blood, but that these protective barriers can be broken down by the constant influx of organisms which may be prevented by surgically removing or shutting off the infectious clot from the general circulation.

#### CONCLUSIONS

We come, then, to the all-important problem of distinguishing between cases which do and do not require operation. It must be realized that the great majority of otologists do not have within their practice a number of these cases sufficient to create a mature judgment. Their decisions rest, therefore, largely upon the reported experience of others as found in the literature.

From my own limited experience and from the mass of literature reviewed the following criteria are offered as positive indications for operation upon lateral sinus and jugular vein.

1. The general condition of the patient. If he is extremely sick or toxic and is daily getting worse.
2. The temperature curve. If this is going higher each day and the diurnal variation is increasing.
3. Blood cultures. If the bacteremia is persistent and the number of colonies per cubic centimeter is increasing.
4. White blood counts. If the count is daily getting higher.

We should add that, if the above indications are positive except that no bacteremia is demonstrated, the operation should be performed any way. From favorable case reports it would seem advisable to give a blood transfusion while working out the diagnosis.

In a borderline case a persistent bacteremia will enable the otologist to earlier decide the necessity for operation. On the other hand, with such a case a persistent negative bacteremia will make one think more strongly of some other complication, especially of erysipelas.

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# NORTHWEST MEDICINE

The Journal of the State Medical Associations of  
Oregon, Washington, Idaho and Montana

Devoted to the interests of the Medical Profession of the  
Pacific Northwest

Editorial Office, 323 Cobb Building, Seattle, Wash.

JANUARY, 1925

## EDITORIAL

### THE NEW YEAR OUTLOOK

It is customary on the threshold of a new year to contemplate plans for the future and consider how they may be carried out in the most profitable and satisfactory manner. The aims and purposes of this journal have been stated from time to time, but this seems a fitting occasion to review them and their application for the coming year. The journal's first obligation is the publication of the annual meetings of the four state associations which it represents as well as the papers read at these meetings. The transactions will be presented as soon as received after each state meeting. The papers will be published in groups as they seem to be best assembled under special headings.

There are numerous papers read before county societies and special medical organizations which will furnish valuable contributions to medical information, and should be published for the benefit of the profession of the Northwest. Such papers are solicited and the secretary of each organization is especially requested to send them to the editor whenever they may be available. Another means of imparting information is the case report. This may not be so elaborate as the formal paper but in concise form may present the substance of the writer's observations and treatment, supplemented by illustrations, if the author so desires. Such contributions are also solicited.

The editorial columns naturally have diversified functions. It is expected therein to discuss problems affecting the four state organizations, whenever information concerning these is received. Editorials of this nature are requested from the physicians of the different states who may be possessed of proper data. It is also desirable that discussions of scientific facts and discoveries should herein be presented. Any of our readers who are familiar with any matters of this nature which they are willing to present to fellow practitioners in editorial form are requested to present the same for publication.

While this journal is not primarily a newspaper, it proposes to publish items concerning the progress

and welfare of medical organizations and individual physicians in the states it represents. Suitable items of this character will be presented each month under the heading "medical news." Items of information for this column are requested from the readers in the different states. Under the heading "correspondence," letters will be published over the writer's signature relating to any matters of medical interest which one may wish to present to the profession. By these various efforts it is desired to enable the physicians of the Northwest to keep in touch with one another, and thus to promote mutual contact and to advance common interests.

A very vital factor in the financial stability of any magazine is the income derived from advertisements. The value of this revenue is obvious to anyone interested in this journal. The character of the advertisements which it presents to its readers is scrutinized with care in order that they may harmonize with the recognized standards of medical ethics and honesty. Therefore, whatever appears in the advertising pages may be accepted as reliable and trustworthy. An index of our advertisers may be found on page 20.

### MEMBERSHIP AND FELLOWSHIP

In the United States there are approximately 145,000 physicians, of whom more than 90,000 are members of the American Medical Association. Of the latter about 56,000 are fellows. What is the difference between a member and a fellow? While a certain number of officials can answer this question, it is a very hazy matter in the minds of the great majority of association members. Briefly, membership in the national association includes all members of state associations, whose names are periodically transmitted by the state secretaries to national headquarters. No membership fee is required for this relationship. To become a fellow one needs to enter a formal application with the accompanying fee of \$5.00, of which \$1.00 is paid to the Association while \$4.00 is applied as subscription to the *Journal of the American Medical Association*. Many members are probably not aware of the group of scientific monthly journals published by the Association, covering many special branches of practice. These journals are unsurpassed by any in their special fields. If one so desires, he may assign his journal subscription to one of these instead of the *Journal*. By this distribution a group of physicians officing together are enabled to receive a number of the most valuable medical journals published, dealing with a variety of specialties.

Of what value is the American Medical Association to the individual practitioner? If one were to judge from the venomous attacks against the Association, emanating from various sources during recent years, he would conclude it is a sinister organization which in some mysterious manner is attempting to throttle and impede the progress of the medical profession. An analysis of these vicious onslaughts reveals that each one has been instigated by interference with a personal activity, such as exposure of some violation of the established principles of ethics or practice, the disclosure of failure to meet the best standards of medical practice, or the assailant has been checked in an effort to attain some questionable objective. No proof of graft or personal exploitation has ever been demonstrated on the part of any official of the American Medical Association. An investigation of this institution will show a group of earnest workers, laboring assiduously for moderate compensation, whose efforts have developed a medical organization which is the greatest factor in our country for the maintenance of the integrity of the medical profession, and which has been of inestimable value in protecting the people of our land from medical frauds and impostures. The monumental lines of work which are continually promoting the welfare of the medical profession can be appreciated only by a personal inspection of the national headquarters in Chicago. A personal visit and inspection of the workings at the A. M. A. building will convince any physician that his individual interests are being promoted and cared for by the officials of this greatest medical organization in existence.

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#### SECRETARIES AND EDITORS CONFERENCE

Under the auspices of the American Medical Association each fall there is held in Chicago a conference of secretaries of state associations and editors of journals who are not secretaries. The conference last November was considered the most profitable to date. It was attended by thirty-seven secretaries, including those from Oregon, Idaho and Montana; also four lay executive secretaries and twelve editors not secretaries. No scientific papers were presented but many matters were discussed of equal interest to representatives from all sections of the country. Whether the secretary was from South Carolina or Oregon, Maine or New Mexico, he found each subject under discussion pertained to the profession of his state, although its details might differ from those of other sections. A notice-

able feature was the participation in all discussions by men from every section of the country. Under these circumstances one could not fail to receive suggestions of more or less value applicable to conditions in his own locality. For instance, nearly all states have workmen's compensation laws, whose difficulties and frictions are similar everywhere. The relations of state and county organizations, the question of special independent local societies, uniform constitutions and by-laws, a model medical practice act, are all vital questions with which every state association is concerned. A secretary attending one of these conferences cannot fail to bring home ideas and suggestions that will benefit the organization which he represents.

The best method of managing the various medical interests in a given state is a vital question. From the experiences presented at this time it would seem that the full-time secretary is a feature to be considered by every state organization. The existence of such an official promotes efficiency of effort and economy of expenditures. His duties are fourfold, including the labors commonly conducted by the secretary of the state association, these functions developed in our public health leagues of the Northwest, management of medical defense and editing the association journal. Four of the larger associations employ physicians as executive secretaries who receive salaries commensurate with their full-time work. Five associations have lay secretaries who carry on the same lines of endeavor, assisted by committees who supervise technical details. The organizations with full-time secretaries, whether medical or lay, all of whose medical interests are thus headed in one office, seem to have the medical affairs of their states organized most effectively and accomplish results with a minimum of effort and friction.

Attendance at one of these conferences emphasizes the unity of the medical profession of the country in a striking manner. They afford an opportunity of dealing with problems of personal and local character that are never considered in national gatherings which are devoted more to scientific and technical questions. It is believed as years go by these gatherings will prove of the greatest importance in promoting the welfare and development of our great body of physicians.

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#### THE SPECIALIST'S NUMBER

It is the purpose of this journal to be of service to the medical organizations of the Northwest to as wide an extent as possible. This desire is illus-

trated by this issue which is devoted to the publication of papers read at the last annual meeting of the Pacific Coast Oto-Ophthalmological Society. While these papers deal with a specialty, and some are of a technical character, most of them present subjects in which every practitioner is interested to a greater or less extent. It is believed, therefore, that their perusal will be of profit to all of our readers and that they will commend the devotion of this issue to these special papers.

#### NEW OFFICIALS OF THE A. M. A.

For many years the management of the American Medical Association and editing its journal have been conducted under the able administration of Dr. George H. Simmons. Under his energetic and efficient guidance the Association has become the outstanding medical organization in existence, and the journal the greatest medical magazine published. For some years it has been obvious that this work should be divided, since there is a limitation to the capabilities of one individual. Accordingly, at the November meeting of the trustees, Dr. Olin West was elected General Manager of the Association; Dr. Morris Fishbein, Editor of the *Journal A. M. A.* and Mr. Will C. Braun, Business Manager.

Dr. Olin West was the natural selection for the office of general manager. After his experience as health officer in his native state of Tennessee, he became connected with the American Medical Association four years ago as secretary, and during recent times has acted as general manager of the Association. He possesses the qualifications and the personality for this office to a degree which could scarcely be duplicated. The Association is to be congratulated that its affairs will be entrusted to one of Dr. West's temperament and vision.

As Editor of the *Journal A. M. A.*, no one could have been selected so fit for this office as Dr. Fishbein. He is a man of capable and brilliant qualities, typical of an editor of a great magazine. His experience as associate editor during fourteen years has proven him a fit man for this position. Under his direction the profession of the country will feel assured that the *Journal* will continue to maintain its influence and leadership in medical affairs. Mr. Braun for more than thirty years has been the advertising manager of the *Journal* and to his efforts its financial success is chiefly due. As business manager he will continue to promote the financial interests of the medical profession, as related to the business success of its great weekly magazine.

## MEDICAL NOTES

**New Drug Announced.** The Rockefeller Institute for Medical Research has announced the release of the drug known as Tyrparsamide for use in the treatment of human and animal trypanosomiasis (African sleeping sickness and *mal de caderas*) and selected cases of syphilis of the central nervous system. This action is based on results reported from clinical investigations which have been in progress for several years. The drug will be manufactured by the Powers-Weightman-Rosengarten Co. of Philadelphia, and will become available through the regular trade channels about January 1, 1925. In releasing the drug for the benefit of the public, the Rockefeller Institute desires it to be known that the Institute does not share in any way in profits that may be derived from the sale of the drug and that, with the cordial cooperation of the manufacturers, provision has been made for the maintenance of a schedule of prices on as low a basis as possible.

**Lead Pipe Poisoning.** Efforts are being put forth, under the auspices of the Victor X-ray Corporation, to obtain information concerning the prevalence throughout the United States of cases of lead poisoning due to the use of lead pipe in household plumbing. It is desired that any readers of this journal who have observed cases or epidemics of poisoning from this cause should report such cases as soon as possible after reading this notice. It is requested that information be given regarding the prevalence of such poisoning, whether cases can be traced to lead pipe in plumbing, whether the epidemics of such have been observed, what is the general attitude of the public regarding the general use of lead pipe for plumbing. It is desired that any information on these subjects will be transmitted to the Victor X-Ray Corporation, 332 So. Michigan Avenue, Chicago.

#### OREGON

**The Sectional Meeting of the American College of Surgeons**, which includes Oregon, Washington and British Columbia, will be held in Portland on Jan. 26 and 27, 1925. Drs. F. H. Martin, George Crile, of Cleveland, Hugh Cabot of Ann Harbor, W. R. Redden, Medical Director of the American Red Cross, M. T. MacEachern, Rev. C. B. Moulmier, S. J. Milwaukee, and Allan Craig will be among the speakers. Also Dr. F. H. Lahey of Boston.

Hospital conference and scientific meetings will be held on Jan. 26 and 27. On the night of Jan. 26, a Community Health Meeting will be held in the Public Auditorium. Clinics will be held at the various Hospitals. A good representation is anticipated from Washington and British Columbia as well as Oregon.

**Officers of State Society.** At a meeting of the Officers and Councillors of Oregon State Medical Society, October 16, 1924, the following Committees were appointed for the ensuing year:

**PUBLIC HEALTH AND DISEASE PREVENTION:** F. D. Stricker, Chairman, Portland; H. R. Cliff, Portland;

George Parrish, Portland; G. E. Houck, Roseburg; W. T. Phy, Hot Lake.

**PUBLIC POLICY AND LEGISLATION:** E. A. Sommer, Chairman, Portland; R. A. Fenton, Portland; Wilson Johnston, Portland; W. B. Morse, Salem; J. A. Pettit,

**LOCAL PUBLICATIONS:** O. B. Wight, Chairman, Portland; C. J. McCusker, Portland; A. A. Witham, Portland.

**HOSPITAL BETTERMENT:** W. B. Holden, Chairman, Portland; T. J. Higgins, Baker; Wm. Kuykendall, Eugene.

#### NOMINATIONS, HOUSE OF DELEGATES

**MEDICAL EDUCATION:** S. E. Josephi, Chairman, Portland; H. B. Myers, Portland; E. P. Steinmetz, Portland.

**MEDICOLEGAL DEFENSE:** W. T. Williamson, Chairman, Portland; A. E. Mackay, Portland; Wilson Johnston, Portland.

**CANCER CONTROL:** E. F. Tucker, Chairman, Portland.

**STATE INDUSTRIAL AFFAIRS:** C. J. Smith, Chairman, Portland; H. S. Mount, Oregon City; W. B. Morse, Salem.

**DIVISION OF CONSTITUTION:** W. T. Williamson, Portland; C. U. Moore, Portland; C. J. Smith, Portland.

**BOARD OF JOURNAL TRUSTEES:** W. T. Williamson, Portland; C. J. Smith, Portland; E. B. Pickel, Medford.

**COMMITTEE TO STUDY THE VARIOUS MEDICAL PRACTICE ACTS, OF THE DIFFERENT STATES, DRAFT A BILL AND SUBMIT IT TO THE COUNCIL:** W. T. Williamson, Chairman, Portland; C. U. Moore, Portland; C. J. Smith, Portland; O. B. Wight, Portland; Wm. Kuykendall, Eugene.

**Health Officer Moves to California.** Dr. George Parish, who has served as health officer at Portland for the past seven years and has thus become thoroly identified with the health bureau, has resigned. He has been appointed health commissioner for Los Angeles, Calif., and has already taken up his work that city. Dr. John B. Abele, who has been his first assistant, has been appointed city health officer, his position being filled by Dr. Hunter Wells, who for the past four years has served as second assistant health officer.

**Memorial to Dr. Mackenzie.** On December 12 a bronze bas relief of the late Dr. Kenneth A. J. Mackenzie, dean of the University of Oregon medical school from 1912 to 1920, was unveiled at the medical school. The relief is a profile bust and an inscription dedicates the bronze to his memory. He labored long and zealously in establishing the medical school in its present location.

**Oregon State Medical Society** will hold its annual meeting in Medford during the first week in May. The exact date and detail concerning the program will be published later.

**Pacific Northwest Medical Association** will hold its annual meeting in Portland, June 29-July 1. An elaborate program is being prepared for this meeting.

**Medical Arts Building.** Medical Arts Building, in Portland, is under construction. It is being constructed at Tenth Avenue and Taylor St. at a cost of \$1,000,000. It will be eight stories high and will accommodate practically 225 tenants. It is expected to be ready for occupancy in July.

**Dr. Rockey Honored.** Dr. A. E. Rockey, the well-known surgeon of Portland, was honored by a banquet in that city Dec. 9 on the eve of his departure for Honolulu, where he will spend the winter. Every

doctor in the Northwest knows and respects Dr. Rockey.

**Doctor Has Narrow Escape.** Dr. M. B. Marcellus of Portland had a narrow escape from a serious or fatal injury last month, when his sedan collided with another, both cars being badly wrecked. The doctor received numerous cuts from broken glass but happily escaped severe injury.

**Dr. H. M. Brown,** of Sheridan, who has been an eye, ear, nose and throat specialist in that city for a number of years, has located at Salem, of this state, where he will continue practice.

**Dr. A. F. Sether,** who has practiced for a number of years in Roseburg, where he has been prominent in civic affairs, has located for practice in Eugene.

**Dr. J. F. Hosch,** who has hitherto practiced at Redmond, has located for practice at Bend.

**Dr. G. S. Morgan,** who has practiced for the past year at McCredie Springs, has moved to Eugene, where he will continue practice.

#### WASHINGTON

**University Extension Lectures.** The University of Washington wishes to announce that the summer extension course will be held July 20-24. The speakers will be Dr. Llewellys F. Barker, of Baltimore, Maryland, Professor of Medicine in Johns Hopkins Medical College; Dr. John C. Clark, of Philadelphia, Professor of Gynecology, in the University of Pennsylvania Medical College; and Dr. Peter Bassoe, of Chicago, Ill., Professor of Neuropsychiatry, in Rush Medical College. Each man will deliver a course of five lectures and will hold at least two clinics. Special entertainment features will be held during the week. This meeting comes within the regular vacation season of the year. Seattle being in the Puget Sound basin, the location is within the ideal locality for spending a week during the hottest months, at the same time profitably. It is hoped that those who read this will plan their summer surcease from work so as to include this lecture course.

**Specialized Doctors Buildings.** The profession of Seattle will soon be superabundantly supplied with specialized medical and dental buildings. The Stimson Building, on Fourth Avenue, opposite the new Olympic Hotel, is nearly finished and tenants are moving in. It covers an area 240 x 110 feet. There are six stories for tenants of whom it will accommodate about 195. A garage in the basement provides for about 75 cars. It has all the latest equipment for a specialized building of this character. The Medical and Dental Building, located at Westlake Avenue and Times Square, is one of the most striking and prominent buildings of the city. The whole structure covers 256 x 100 feet. About half of this area is built to a height of eighteen stories of which sixteen are devoted to doctors and dentists. It will accommodate about 250 tenants. It is expected to be opened for occupancy sometime in March. The basement will contain a garage for about 100 cars. The latest up-to-date equipment for a doctors and dentists building will be exhibited in this structure.

**Hospital Plans Completed.** Plans for the Walla Walla general hospital have been exhibited. They provide for a building to cost \$150,000, on a lot 120 x 40 feet. It will be two stories in height with a center portion of three stories. It will contain sixty rooms with the usual provisions for surgery, laboratory, etc. It will be a class A, fireproof structure.

**New Hospital Planned.** Articles of incorporation were last month filed at Olympia for the proposed Clallam County General Hospital to be located at Port Angeles. It will be a standardized hospital, containing from fifty to seventy-five beds with up-to-date equipment in every respect. It will cost \$100,000, shares of which are now being sold by the organizers.

**New Hospital Discussed.** The subject is being agitated in Seattle of a combined county and city hospital to cost \$2,000,000. The location under consideration is on Beacon Hill, on property which is owned by the city. This is one location where adjacent resident property owners can not object to the location of a hospital, this being a district of parks and few private dwellings.

**Hospital Under New Management.** The Valley Hospital, at Sedro-Woolley, will hereafter be under the management of Miss Amy Ingram who has purchased the entire interest in the institution. New equipment will be installed to make it an up-to-date institution.

**Fire in Asylum.** Prompt action averted a probably serious fire at the Western State Hospital, at Steilacoom, early last month. The local fire department, aided by that from Tacoma, checked the blaze after it had attained a vigorous start.

**School Closed by Scarlet Fever.** Early last month the county health officer at Ellensburg closed a school near that city on account of an outbreak of scarlet fever. This vigorous action checked the spread of an epidemic.

**Tuberculosis Death Rate Reduced.** According to statistics presented by the State Tuberculosis League the death rate from tuberculosis in this state has fallen from 96.3 per 100,000 people in 1920 to 76.7 in 1923. This result is in part due to the free chest clinic which is conducted in the various cities of the state by Dr. J. W. Fennell, clinician for the association.

**Indian Children in Good Health.** Sixty Indian children at White Swan Agency, Yakima, were recently found to be free from tuberculosis and to compare favorably with similar groups of white children. All were found to have infected teeth, however, and most of them had diseased tonsils.

**Diploma Fraud Exposed.** Much notoriety of late has appeared in the daily press regarding the diploma mill conducted by the American University of Sanipractic in Seattle. It seems these diplomas have been sold for sums ranging from \$50.00 to \$500.00. It was stated that the prosecution would ask for the dissolution of this alleged university for production of practitioners.

Dr. A. B. Hepler, who has been connected for several years with the University of California medical school at San Francisco, has moved to Seattle, where he will engage in private practice.

Dr. Henry Odland, who has been connected with the University of Minnesota medical school at Minneapolis for a number of years, has located in Seattle where he will practice for the future.

Dr. C. M. Tinney, formerly of Bremerton, who has been in the public health service and recently transferred to Ft. Baird, N. M., has resigned and has located for practice at Los Angeles, Calif.

Dr. J. E. Preucell, who has practiced for a number of years at St. John, has left that town and has located for practice in Colfax.

Dr. J. W. Henderson, who has practiced in Colville for more than ten years where he has served as city health officer, has resigned this position and located for practice at Longview.

Drs. W. M. Davidson and J. C. Hay, who have been located at Victoria, B. C. for sometime, have moved to Port Angeles where they will continue practice.

Dr. J. W. Fennell, recent physician for the State Anti-Tuberculosis League, has located for practice at Bellingham.

Dr. J. P. Weber, who has for several years lived at Nez Perce, has located for practice at Grangeville.

Dr. R. R. Kerkow, recently of Spokane, has located for practice at Oroville.

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#### IDAHO

Dr. V. C. Belknap, formerly of Prairie City, Ore., has moved to Nampa where he has begun practice.

**Medical Wedding.** Dr. Carl May, of Hamilton, was married November 26 to Miss Adeline Mires, of Spokane. Dr. May formerly practiced in the latter city.

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#### MONTANA

**Report of Compensation Committee.** At the annual meeting of the Montana association in Helena last summer, the Compensation Committee, appointed to consider the relations between the Medical Association and the Industrial Accident Board, made the following recommendations:

1. It is desirable to raise the present maximum amount from \$100.00 to \$500.00.
2. To extend the present fourteen day limit to a period of six months:
3. That the Industrial Accident Board recognize and adopt the medical fee schedule of the Medical Association of Montana which is accepted by the United States Industrial Board.
4. That a copy of these resolutions be spread on the minutes of the Medical Association of Montana and a copy be mailed to every member of the profession in the state, to the Industrial Accident Board and to the legislature.
5. That the Compensation Committee of the association have power to act for the Medical Association of Montana in accordance with these resolutions.

**Medical Defense Group Policy.** Letters have been sent to each member of the State Association, containing details of the Aetna Group Policy, for protection against malpractice. The company has promised a rate of \$15.00 for the minimum amounts, if 200 members will subscribe. Every physician will have a chance to protect himself in case of a malpractice suit. There are many good features to recommend this group plan. Therefore, the secretary hopes each one will at once advise his county society or communicate with him if there is no such society in his district. Write Wilcott and Company, 49 E. Broadway, Butte, if you wish the policy.

**Association Dues Payable.** Attention of the physicians of Montana is called to the fact that the Medical Association of Montana dues for 1926 are now payable, amounting to \$5.00. Prompt payment is requested in order that the members may be in good standing in the state and national associations, regularly receive Northwest Medicine and not jeopardize the association's Aetna policies.

**Dr. Geo. McGrath,** of Hamilton, president of the state medical association, is visiting in Toronto. He will visit clinics in New York City and elsewhere before returning home.

**Dr. E. G. Balsam,** secretary of the state association, has recently returned home from attendance at the Conference of State Secretaries held in Chicago, during which time he also attended Eastern clinics.

#### OBITUARIES

**Dr. I. M. Harrison,** of Seattle, Wash., died November 24. He was born in Warrensburg, Mo., in 1856. He graduated from the Missouri State Normal School in 1876 and in 1880 received his medical degree from the University of Michigan. In 1883 he came to Puget Sound, practicing first at Port Townsend. At different times he has practiced at East Sound, Roche Harbor and Seattle. For several years he served on the Seattle board of health and was its president in 1904. He had a wide circle of friends and patients in San Juan county.

**Dr. Howard E. Henderson,** of Bellingham, Wash., died December 17 after an illness of several months. He was 63 years of age. He located in Bellingham for practice in 1889. He was city health officer of North Whatcom 1891-1898 and of Whatcom in 1903, previous to these cities being combined into the city of Bellingham. He was prominent in city affairs as well as fraternal and church circles.

**Dr. Fritz Mathewes,** of West Sound, Wash., died December 14 at 84 years of age. He was born in England and before coming to this country served as medical officer in the English Army. He located at West Sound, on Orcas Island, 28 years ago and for many years was the only practicing physician on the island. He had a wide acquaintance and many friends in Island County.

**Dr. A. W. Sifton** died at Castle Rock, Wash., Nov. 15, at the age of seventy-two. He had lived in that city a short time, having recently arrived there from Mexico.

## REPORTS OF SOCIETY MEETINGS

### OREGON

#### CENTRAL WILLAMETTE MEDICAL SOCIETY

Pres., E. W. Howard; Sec'y, W. T. Johnson

A meeting of the Central Willamette medical society was held in Corvallis, Ore., Dec. 4. This society embraces Lane, Linn, Lincoln and Benton Counties.

The following officers were elected for the ensuing year: president, Dr. W. B. Neal, Eugene; vice-president, Dr. Tatar, Corvallis; secretary-treasurer, Dr. S. G. Beardslee, Eugene; censor, Dr. J. B. Clark, Harrisburg. The next meeting of the society will be held in Eugene the first Thursday of January.

#### LANE COUNTY MEDICAL SOCIETY

Pres., W. H. Dale; Secty., E. L. Zimmerman

The regular meeting of the Lane County Medical Society was held at Eugene, Ore., Nov. 20, 1924. The meeting was well attended.

Dr. Guy Strohm, of Portland, read a paper on "Blood Injections," which was discussed by Dr. C. D. Donahue. Dr. W. W. Hicks, of Junction City, read a paper on "Local Infections," which was discussed by Dr. Gaven Dyott, of Cottage Grove.

#### NORTH PACIFIC SURGICAL ASSOCIATION

The thirteenth annual meeting of North Pacific Surgical Association was held at the University Club, Portland, Ore., Dec. 12-13. More than thirty members were in attendance from the states of the Pacific Northwest and British Columbia.

The following program of papers was presented:

A Glimpse of Medical Surgery, H. B. Storrs, Vancouver, B. C.; Colonic Stasis, R. D. Forbes, Seattle, Wash.; Factors of Safety in Gallbladder and Duct Surgery, P. D. Rockey, Portland, Ore.; Value of History in Diagnosing Gallbladder Diseases, Andrew Smith, Portland, Ore.; Congenital Hernia of the Diaphragm, E. A. Sommer, Portland, Ore.; Cancer: An Adaptive Retreat of the Cell From Physical Adversity, A. E. Rockey, Portland, Ore.; Chronic Duodenal Obstruction, H. J. Whitacre, Tacoma, Wash.; Treatment of Diffuse Peritonitis, H. P. Marshall, Spokane, Wash.; Cardiolytic for Adherent Pericardium, A. O. Loe, Seattle, Wash.; Operative Fractures of the Forearm, C. D. Hunter, Tacoma, Wash.; Acute Infections of the Costal Cartilages; C. M. Doland, Spokane, Wash.; Chronic Endocervicitis, A. T. R. Cunningham, Spokane, Wash.

The following officers were elected for the ensuing year: president, Dr. C. F. Eikenbary, Spokane; first vice-president, Dr. H. B. Storrs, Vancouver, B. C.; second vice-president, Dr. H. M. Robertson, Victoria, B. C.; councillors, Dr. J. B. Eagleson, Seattle, and Dr. J. B. McNerthney, Tacoma; financial trustee, Dr. C. W. Sharples, Seattle; secretary-treasurer, Dr. M. G. Sturgis, Seattle.

### WASHINGTON

#### BENTON-FRANKLIN COUNTY MEDICAL SOCIETY

Pres., A. G. Tullar; Sec'y, C. M. MacKenzie

A meeting of the Benton-Franklin County society was held at Pasco, Wash., Dec. 8.

The following officers were elected for the ensuing

year: president, Dr. A. G. Tullar, Kennewick; vice-president, Dr. H. B. O'Brien, Pasco; secretary, Dr. C. M. MacKenzie, Kennewick.

#### CHELAN MEDICAL SOCIETY

Pres., R. T. Congdon; Sec'y, R. S. Mitchell

The annual meeting of the Chelan County medical society was held at Wenatchee, Wash., Dec. 9, in connection with a dinner at the Elks' Temple. Drs. D. A. Nicholson and E. P. Fick of Seattle were guests of the society.

The following officers were elected for the ensuing year: president, Dr. R. S. Mitchell, Wenatchee; vice-president, Dr. Edward Haden, Cashmere; secretary-treasurer, Dr. Henry Baer, Wenatchee; delegate to state medical association, Dr. F. H. Grosvenor, Wenatchee; alternate, Dr. Earles D. Sawyer, Wenatchee.

#### KING COUNTY MEDICAL SOCIETY

Pres., F. T. Maxson; Secty., C. E. Watts

The General Meeting of King County Medical Society was called to order December 1, at 8:10 p. m. by President Maxson. Minutes of the previous meeting were read and approved.

The President announced the committee on County-City Hospital as follows: Drs. Horton, Swift, von Phul, George Dowling and Bourns.

Dr. M. G. Sturgis read a paper on "Edebohl's Operation." This operation has been largely discredited, but may be of value in the cases of acute swelling of the kidneys. He reported such a case of acute nephritis complicating pregnancy, in which the operation was performed some months after delivery. The benefit was most marked, and the patient's life has been prolonged without doubt and her comfort increased. The case is not presented as a cure, but the improvement is sufficient to warrant the occasional use of the operation.

In discussion, Dr. Bourns recalled that the operation was widely used twenty years ago, but he has not heard of its use lately.

Dr. Maxson called to the attention of the membership the problems of the Service Bureau, in order that the members might discuss it more freely at the annual meeting. The question of a permanent home for the Society was also brought up by Dr. Maxson for consideration by the members.

Dr. H. J. Davidson, Chairman of the Committee on Service Bureau, stated that the bureau can not be operated at a profit, since it has a much larger overhead to carry than the State Department.

Nominations for officers for 1925 then followed:

President, Drs. A. H. Peacock, D. C. Hall, and Arthur Crookall; Vice-President, Dr. L. J. Palmer; Secretary-Treasurer, Drs. C. E. Watts, Dr. O. H. Christoffersen and F. J. Clancy; Board of Trustees; Drs. F. A. Slyfield, R. J. McCurdy, C. W. Knudson and H. J. Davidson; Delegates to the Washington State Medical Association, Drs. W. Kelton, G. W. Swift, F. T. Maxson, D. H. Houston, W. H. Anderson, D. V. Trueblood, A. E. Burns, C. E. Hagyard, J. T. Dowling, J. B. Eagleson, G. C. Miller, F. S. Bourns, A. O. Loe, D. H. Palmer and M. G. Sturgis.

Dr. Frederick Parker discussed the First Aid Contest conducted by the National Guard, and urged the donation of a prize cup by the Society for this contest. It was moved and carried that the matter be referred to the Board of Trustees with power to act.

#### LEWIS COUNTY MEDICAL SOCIETY

Pres., Harvey Feagles; Secty., Rush Banks

A meeting of Lewis County Medical Society was held at Chehalis, Wash., Dec. 8. Dr. C. C. Tiffin, of Seattle, read a paper on "Goiter and Its Treatment."

The following officers were elected for the ensuing year: President, Dr. R. H. Campbell, Vader; vice-president, Dr. J. T. Coleman, Chehalis; secretary-treasurer, Dr. Rush Banks, Centralia.

#### PIERCE COUNTY MEDICAL SOCIETY

Pres., S. M. MacLean; Sec'y, W. B. Penney

The regular meeting of the Pierce County Medical Society was held in its room at Tacoma, Wash., Nov. 25, 1924; Dr. MacLean in the chair. Minutes of the last meeting read and approved.

#### CASE REPORT

Dr. Houda presented a case of "Progressive Muscular Atrophy" of two years' standing. All recommended treatments have been tried and failed so far. Paralysis confined to shoulder girdle muscles, with slight impairment of speech.

#### SCIENTIFIC PROGRAM

"Medical Follies of 1900," Dr. J. F. Griggs. Attention was called to such periods as that of ovariectomy, autointoxication and the uric acid diathesis and advised caution in the use of vaccines and organotherapy. Discussion by Drs. J. R. Brown, Quevli, Penney and Charles McCreery.

"Retrodplacements of the Uterus as a Sequel of Childbirth," Dr. C. J. Brobeck. Childbirth is an etiologic factor in a large percentage of cases of retrodplacement. Of 500 cases examined from six weeks to one year after delivery 107 cases were found, or 21 per cent. Of these, 47 were primiparae, and 60 multiparae. An orthopedic cure by pessary and posture may be obtained in 63 per cent. Advises use of a pessary in recent cases for six months to one year, daily knee-chest position, and lying on stomach one hour daily, beginning immediately after delivery. Discussion by Drs. Gammon, Griggs and William McCreery.

A motion was made that the question of fraudulent advertising of gland extracts as made by the Lewis Laboratory of Chicago in the daily papers be taken up with the Better Business Bureau.

#### SPOKANE COUNTY MEDICAL SOCIETY

Pres., C. E. Butts; Secty., G. H. Anderson

The regular meeting of the Spokane County Medical Society was held Dec. 11, 1924, in the Assembly Room, Old National Bank Building, Spokane, Wash. Minutes of previous meeting were read and approved.

The resignations of Drs. H. E. Rhodehamel and

C. M. Doland from the Board of Censors were read and accepted by the Society unanimously. No one was elected to fill the vacancies, the Chair feeling that this could be taken care of at the annual meeting next month.

#### SCIENTIFIC PROGRAM

Dr. J. C. Moore, of Seattle, read a paper on "Cosmetic Surgery of the Thyroid". Discussed by Drs. Butts and Herpel.

Dr. H. V. Wurdemann, of Seattle, read a paper on "Prevention of Eye Accidents in Trades and Visual Requirements for Trades and Professions". Discussed by Dr. Hilscher.

There being no further business to come before the Society, the meeting was adjourned.

#### WHITMAN COUNTY MEDICAL SOCIETY

Pres., L. G. Kinzey; Secty., Frank St. Sure

Whitman County Medical Society met in regular session at Colfax, Wash., Nov. 24, 7:30 p. m., in the office of Drs. Mitchell and Skaife.

The meeting was called to order by the acting President, Dr. D. MacIntyre, who presided until the President, Dr. L. G. Kimsey, arrived. The following members present: Drs. R. J. Skaife, F. X. Emerson, C. H. Russell, A. J. Lukins, P. G. Weisman, D. T. Ford, F. A. Bryant, D. MacIntyre, J. E. Preucell, S. C. Bridgeham, L. G. Kimsey, F. St. Sure. The following visitors were present, Dr. Edgar White, of Lewiston, Ida., Dr. N. A. Faus of Colfax and Mr. Jennings representing Mulford and Company.

At the last meeting it was decided to devote a certain portion of each meeting to the discussion of business methods as affecting the profession. Accordingly time was given to this subject and an interesting and profitable discussion developed among those present. It culminated in a motion by Dr. J. E. Preucell, seconded by Dr. F. A. Bryant, that the president appoint a committee of three to report at the next meeting suggestions as to improvements in the business methods of our professions. The motion being carried, the President appointed Drs. D. MacIntyre, J. E. Preucell and P. G. Weisman.

The committee on health and welfare publicity stated that they expected to be able to report definite progress at our next meeting.

A discussion developed as to the advisability of goiter prophylaxis among the school children of Whitman County. The sentiment seemed to be against the indiscriminate use of iodine among the school children. According to Dr. Weisman, who has just returned from the East from a postgraduate trip, iodine is administered to children only when properly supervised by the medical profession. Mr. Jennings, representing H. K. Mulford & Company deplored the indiscriminate use of iodine. He stated that in Seattle and Yakima iodine tablets are administered to children under medical supervision. Upon motion of Dr. D. MacIntyre, seconded by Dr. A. J. Lukins, this goiter matter was turned over to Dr. Skaife with authority to take up matter with County Commissioners

and that the society favored the administration of iodine to school children as a goiter preventative when indicated and under proper medical supervision.

Dr. Edgar L. White read a very instructive paper entitled, "Physiotherapy from the General Practitioner's Standpoint." He discussed diathermy and ultraviolet ray therapy.

Dr. J. Edward Preucell delivered a paper on "High and Low Blood Pressure," which showed much thought and attention.

Dr. L. G. Kimsey talked on "An Unusual Case Met With In Practice." Considerable discussion was evoked by Dr. Kimsey's case.

Upon motion of Dr. D. MacIntyre, a vote of thanks was extended to the gentlemen who appeared on the evening's program and especially to Dr. Edgar White, of Lewiston.

It was decided to hold the next meeting in the spring, as soon as the roads and weather would warrant.

## PUBLIC HEALTH LEAGUES

### OREGON

#### RESULTS OF RECENT ELECTION

The medical profession of Oregon views with much satisfaction the results of the November election which displayed the discriminating judgment of the citizens of this state regarding matters of public health. The objectionable workmen's compensation amendment was smothered under a vote of nearly two to one. The proposed naturopathic bill was buried nearly as deep. A similar fate was administered to the oleomargarine and milk measure. The Public Health League takes satisfaction in its participation in bringing about these results.

#### PROPOSED LEGISLATION

In order that a curb may be placed on the indiscriminate and unchecked efforts of various cults in their imposition on the credulous public, the Public Health League is preparing an amendment to the medical practice act, requiring all those who desire to be examined in any system or mode of treating the sick or afflicted, to be first examined by an educational board who shall pass upon their qualifications in the general subjects of anatomy, physiology, chemistry and all other fundamental branches. A law will be presented for passage which will prohibit anyone from practicing or holding himself out as a doctor unless he carries a license from the state of Oregon.

### WASHINGTON

#### THE TREND OF HEALTH LEGISLATION

As a beginning step forward in meeting the present unsatisfactory condition in Washington, touching the licensing of drugless healers, the Public Health League will probably offer amendments to the present statutes governing all who desire to practice healing in the state. A basic examination in the

fundamental subjects will be required, if these amendments are received favorably by the legislature, which convenes at Olympia on January 12, so that an applicant for any particular cult or system must take the preliminary examination before he is eligible to participate in the general examination before the Department of Licenses at Olympia.

The measure will call for a preliminary examination at the University of Washington, in such subjects as anatomy, physiology, pathology, chemistry and hygiene. This preliminary test will be conducted by the faculty of the university and by instructors teaching the subjects enumerated. On certification from the university, the applicant must then appear before his own board for an examination in the particular method of healing he desires to practice.

In view of the recent startling disclosures made possible by the suit for dissolution of the American "University" of Sanipractic by the Attorney General, it is believed that the legislature will pass these amendments. From allegations filed in this action it would appear that this school has not in fact been a school at all, but rather a strictly commercial institution, whose president went out in the byways and highways seeking victims. The complaint of the attorney general's office states that prices for diplomas ranged from \$3.75 to several hundred dollars.

Though there was hardly a colorable attempt on the part of this "university" to instruct, and while some of the students have confessed that they did not attend, or if they did went but a few days or weeks, the League is not advised that anyone from the American University of Sanipractic ever failed to "get by" the examination offered by the board of drugless healers. In fact, it is estimated that over 75 per cent of these healers now "doctoring" in Washington were sheepskinned from this alleged college.

#### A PIONEER CONFERENCE

For the first time in the history of Washington, the professional Big Three, physicians, dentists and pharmacists, met recently in Seattle and discussed legislative needs and problems. In addition to the regular officers of the League, the members of the Dental Bureau of the organization and the dental board, as well as the pharmacy officers of the League and prominent men of this profession, met in conference and informally laid plans for mutual protection on the basis of the public health.

These three professions, heretofore indifferent and at times opposed to certain legislative policies, under League guidance have formulated a cooperative plan of action that should be valuable to each. It was a significant feature of the meeting that every proposal discussed was considered purely from the public health standpoint. Those which might be termed essentially professional in outlook were laid aside. The entire program adopted is one which primarily, if accepted at Olympia, will work entirely to the health benefit of the public.

#### PHYSICIANS AT OLYMPIA

Six representative physicians of the state will participate in the nineteenth session of the legislature which will convene at Olympia on January 12. This is said to be the largest number of this profession in the legislature in Washington history. In fact, it is doubtful if any state can boast of larger scientific representation in its law-making assembly.

Senator Warner Karshner will go to Olympia again from Pierce County. This will be his third term in the senate. He ran far ahead of his opponent on November 4. His medical colleague, Dr. J. C. McCauley, who served in the last two sessions of the senate, scored a tremendous victory in the thirteenth senatorial district, obtaining a majority of over 4500 votes.

Dr. V. C. Capron of San Juan County overcame opposition in the primary and went through the final test without trouble. He has had several terms in the lower house and is one of the influential men in legislative affairs. His colleague on the house committee of medicine, dentistry and pure drugs, Dr. A. F. Brockman of Bickleton, had no difficulty in being returned.

Drs. Capron and Brockman will have the aid of two more physicians at this session. Dr. J. C. Durrant of Snohomish, a former member of the medical board of the state, is one of the representatives from Snohomish County, while Dr. George W. Overmeyer of Chehalis, also a former medical board member, was elected from Lewis County with a heavy majority. The experience of these two medical board members will be valuable when health legislation is being considered on the house side.

A dentist, Dr. Carylton of Thurston County, one of the old "war horses" of his party, and a man of keen judgment and a wide understanding of legislative proceedings, in a sensational campaign was returned to the senate. Senator Carylton has always worked with the medical representatives in all health measures, and he will be particularly helpful at this session, where many constructive health bills will be presented.

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**Cessation of Diabetes Insipidus on Roentgenray Treatment of Pituitary Gland.** The evidence presented by T. B. Towne, San Francisco (Journal A. M. A., Dec. 27, 1924), suggests that a cure of diabetes insipidus was effected as a result of recession of a pituitary tumor under roentgenray treatment. It is said to be the first case of the kind on record. This patient suffered from diabetes insipidus, associated with one definite sign of a lesion in the vicinity of the optic chiasm—a defect in the upper temporal quadrant of the right visual field. A diagnosis of pituitary tumor was made, and the patient was treated by roentgenray crossfire to the pituitary region, in hope of causing recession of the tumor. Three months later the visual fields had returned to normal and have remained so. The urinary output dropped from about 8 liters to about 3.5 liters in the first three months; there was a recurrence at the fifth month which again appeared to respond to the roentgen ray; and there was another recurrence and similar, though slower, response beginning in the eighth month.

## BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

**Diseases of the Heart.** By Dr. Henri Vaquez, Professor of the Faculty of Medicine of Paris; Translated and edited by George F. Laidlaw, M.D., Associate Physician to the Fifth Avenue Hospital, New York City; Introduction by William S. Thayer, M.D., Johns Hopkins Hospital, Baltimore, Md. Octavo volume of 743 pages, illustrated. W. B. Saunders Company, Philadelphia and London, 1924. Cloth. \$8.50 net.

It is always of interest and value to broaden our professional horizon by studying the work of other nationals and in France Professor Vaquez is the leading authority on diseases of the heart and circulation, a former pupil and assistant of the famous "le père Potain."

The present volume is a very complete treatise, including preliminary chapters on anatomy and physiology, and on methods of examination which embrace graphic methods by tracings, radiology and electrocardiography. In passing it may be noted that Vaquez states that the patient should be at least eight feet from the x-ray tube in order to avoid the deformity of the shadow of the heart and aorta, produced by the convergence of the rays at a less distance. Deformity of the aortic shadow, leading to diagnosis of aortitis, is not an uncommon error from taking plates of the chest at distances of a few feet.

The author's description of angina pectoris is particularly illuminating and decisive. He affirms that no clear-cut distinction can be drawn between true and so-called false angina; that false anginas are usually false diagnoses. The special form of angina, or decubitus angina, occurring at night in high tension cases, is one not usually to be found delineated in English works. There is no mention of cervical sympathectomy in treatment of angina, nor of the fact that angina is singularly absent in charity hospital patients, although aortitis and sclerotic diseases of the coronary arteries are so common. There must be needed an acuter sensibility of the nervous system than is frequent in charity patients in order that angina may occur. Vaquez finds that angina happens in patients free from coronary disease, and therefore the writer believes that angina is due to distension of the diseased aorta in aortitis caused by exercise. There is loss of aortic elasticity and consequent excitation of nerve filaments conveyed to the cardiac plexus and angina. It is the cry of pain of a diseased aorta.

Vaquez has the gallic art of vivid and striking descriptions. In speaking of aortic stenosis and of aortic sounds, he says the second sound is usually normal. This remark can only apply to very slight cases of stenosis because one of the most salient signs of aortic stenosis is absence of the second sound. When one sees at autopsy that the aortic orifice is reduced to a mere slit or small aperture by infiltration of the valves with lime salts, so as to represent a concrete structure, it will be realized

that there can be no such thing as closure of the valves and second sounds.

The French treatment naturally varies from ours. Digitalis is not used in such effective doses as by the English and ourselves. The use of daily dram doses of the tincture is noted as being used by Mackensie, and about half that amount by Vaquez. There is certainly no more brilliant treatment in medicine than that of waterlogged patients with mitral disease and fibrillation by dram doses of the tincture of digitalis, with theocin and Karella diet. The book is an admirable clinical treatise on the heart and is a distinct addition to our authoritative literature on the subject. But in conclusion it must be conceded that the greatest contributions to progress in cardiology have been made in the last decade by Great Britain, especially by Mackensie and Lewis.

WINSLOW

**Practical Chemical Analysis of the Blood.** For Physicians and Laboratory Workers. By Victor Caryl Myers, M.A., Ph.D. Professor and Director of the Department of Biochemistry, New York Post-Graduate Medical School and Hospital. Cloth. 232 pp. \$4.50. Second Revised Edition, Illustrated. C. V. Mosby Co. St. Louis. 1924.

This new edition takes cognizance of all newer methods which are of proven value, or are likely to become so. Included in this category are the determinations of blood calcium and other mineral constituents, such as magnesium, sodium, phosphorus, etc.; the determination of the gaseous content, hydrogen ion concentration, acetone, etc.

The author does not hesitate to deviate from the strictly demarkated field of blood chemistry to give the reader the benefit of advanced technic and findings in determinations, which are either closely related to blood examinations, or aid in diagnosis of conditions wherein the blood determinations are important. Thus, a method is given for salivary urea, for the general experience is that salivary and blood urea run closely parallel. Also several useful micro methods are given for urine, for, although blood analysis has reached such a stage of perfection that the urinary findings are overshadowed in importance, yet the latter are often of confirmatory value.

It should not be thought that this is a purely laboratory manual. Indeed, the systematic manner in which the author has considered the correlation of clinical diagnosis with the blood findings should render the book of especial interest to practitioners, many of whom are still somewhat hazy on just what may be expected of blood analysis in various conditions and the interpretation of the findings after they are at hand. It is pleasing also to note the emphasis placed on the value of the determination of the carbon dioxide combining power of the blood, a procedure which, in spite of its great value in a number of conditions, is still "extensively unused" by the profession.

CEFALU

**Medical Gynecology.** By Samuel Wyllis Bandler, M.D., Professor of Gynecology, New York Post-Graduate Medical School and Hospital, etc. Fourth edition. Thoroughly revised. 930 pp. \$8.00. W. B. Saunders Co., Philadelphia and London, 1924.

Under "Examination" are placed all of the more recent methods in concise and accurate description, which gives a fine compend of progress. Dannreuther summarizes urogenital diagnosis in a masterly manner. The chapter on treatment shows additions rather than changes.

One naturally turns first to the author's forte, the endocrine glands, and meets with no disappointment. This is excellent, evidencing a saner judgment, and will bear much thought and study. Throughout the book one meets ever and anon the opinion of the endocrinologist, at times carried to the extreme, but withal marking an advance in facts clinically proven, and in theories which now seem purely speculative. In this, however, there is less of empiricism than one would expect. The book is replete with "ready-to-use" data which assures it a high place in the opinion of the busy man and furnishes much material to stimulate investigation by those inclined along lines of research.

G. G. THOMSON

**A Manual of Diseases of the Nose and Throat.** By E. B. Gleason, M.D., LL.D. Professor of Otolaryngology, Medico-Chirurgical College Graduate School, University of Pennsylvania. Fifth Edition, Thoroughly Revised. Cloth, 660 pp. W. B. Saunders Company. Philadelphia and London. 1924.

The author has compressed an amazing amount of information into small space in this volume which is intended for students and general practitioners. Without any loss to the general physician it could be made still more compact, as many of the procedures described are such as should only be attempted by the most skilled and, if the physician knows what to attempt and what to leave alone, he will find this a valuable aid in the treatment of many patients whom he would otherwise send to a specialist. The section devoted to formulas is especially good, as the effect of the various remedies is discussed at some length, making a valuable treatise on the therapeutics of otolaryngology.

BRUCMAN

**Safeguarding Children's Nerves.** A Handbook of Mental Hygiene. By James J. Walsh, M.D., Ph.D., Sc.D., Professor of Physiological Psychology, Cathedral College, New York and John A. Foote, M.D., Professor of Diseases of Children, Georgetown University Medical School. 272 pp. J. B. Lippincott Company, Philadelphia and London. 1924.

The author states this is a summary of what they believe should and should not be done as a means to upbuild or restore the mental and nervous health of the infant and the nervous child. Consideration of the subject is indicated by some of the chapter titles, such as the nervous child, the spoiled child, rest and fatigue, habits good and bad, how dreads and dislikes are formed. Throught is stressed the idea that in many cases the parents need supervision

as much as the child. It is wisely stated that "nervous children are particularly likely to grow up as ne're-do-well's if they lack discipline." Considerable space is devoted to habits of childhood, habit spasms, tics, etc. It is emphasized that training rather than punishment and penalty are essential in rearing children. The book is full of useful suggestions.

SMITH

**A Textbook of Materia Medica for Nurses.** By A. L. Muirhead, M.D., late Professor of Pharmacology, Creighton Medical College, and Edith P. Brodie, A.B., R.N., Instructor in Materia Medica and Therapeutics, Washington School of Nursing, St. Louis. Second Edition 190 pp. \$2.00. C. V. Mosby Company, St. Louis. 1924.

The author states this little book is written for the undergraduate nurse and with her needs and limitations constantly in mind. It is not a digest of materia medica but gives the essential facts concerning drugs and remedies which the nurse needs in her profession. It is arranged in chapters concerning different parts of the body, as drugs which affect the blood, the circulation, respiratory system, secretory system, etc. There is a description of the various forms of administering drugs and their purpose. It is an excellent book for the purpose for which it is intended.

**Outlines of Internal Medicine.** For the Use of Nurses and Junior Medical Students. By Clifford Bailey Farr, A.M., M.D., Director of Laboratories, Pennsylvania Hospital, Department of Nervous and Mental Diseases, etc. Fourth and Revised Edition. Illustrated with 69 engravings and 6 plates. 377 pp. \$2.75. Lea & Febiger, Philadelphia and New York. 1924.

This book is intended as a systematic course in medicine for nurses as well as a reference book to which she may turn for information in dealing with rare cases. While symptoms, pathology and diagnosis are considered rather extensively, treatment is discussed briefly for information rather than guidance. The essential facts are presented of diseases most commonly encountered in practice. Eight parts are devoted to diseases of the various systems of the body, while two treat of external causes of disease, as well as infection and parasitic diseases. There is much of information in this volume which will enlighten anyone desiring brief discussions on internal medicine.

**A Woman's Quest.** The Life of Marie E. Zakrzewska, M.D. Edited by Agnes C. Vietor, M.D., F.A.C.S. Formerly Instructor in Physical Diagnosis and Surgery, Woman's Medical College of the New York Infirmary, etc. 514 pp. D. Appleton and Company, New York and London. 1924.

This book presents a fascinating description of the life of a woman who actively participated in establishing the position of the woman practitioner during the years when she was totally unwelcome in the realms of medicine. Born in Berlin, in 1829, she came to America as a trained midwife in 1852. Four years later she graduated from the medical department of

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Western Reserve University and attempted the practice of medicine in New York. There she encountered trials and vicissitudes of the pioneer. Eventually she had an active part in the establishing of hospitals for women and children in Boston, Philadelphia and New York. She describes many interesting intimacies with the notables in medicine and science of this country during an active life of 73 years. One interested in medical biography will find this a book well worth reading.

SMITH

**The Medical Clinics of North America** (Issued Serially, one number every other month. Volume VIII, Number II (September, 1924, Chicago Number). Octavo of 273 pages and 24 illustrations. Per clinic year (July, 1924 to May, 1925). Paper, \$12.00; Cloth, \$16.00. W. B. Saunders Company, Philadelphia and London.

Volume VIII. Number III, November, 1924. (Philadelphia Number.) Octavo of 324 pages.

The Chicago number presents discussions by well-known members of the profession of that city. Gerstley and Wilhelmi consider non-operative treatment of pyloric stenosis in infancy with a description of two cases. They believe there are some cases in which operation is necessary but many others can be cured without operative procedure. There are papers on different phases of nephritis by Mix and Grulee; also a number of papers dealing with different pathological conditions of the cardiovascular system.

The Philadelphia number considers vital topics by leaders of the profession in that city. Jump deals with essential hypertension which he states is a disease per se, usually benign but may be accompanied by serious consequences. He presents an interesting discussion of cases, symptoms, sequelae and treatment. Syphilis of the liver is not a common condition. A case is presented by Miller, accompanied by an enlightening discussion of these conditions. The clinical discussions presented in both of these volumes are valuable to all interested in internal medicine.

**The Surgical Clinics of North America.** (Issued serially, one number every other month.) Volume 4, Number 4 (Cleveland Number—August, 1924), 248 pages with 218 illustrations. Per clinic year (February, 1924, to December, 1924). Paper \$12.00; Cloth \$16.00 net. Philadelphia and London: W. B. Saunders Company.

In this volume may be found many articles of as much, if not more value to the internist than to the surgeon. This follows because the matter is of a purely diagnostic importance and half the papers originate from the department of internal medicine. Where internists are in constant collaboration with surgeons the work of each is enhanced in value. Perhaps among all the articles, none appeals to the reviewer as of more usefulness than that on x-rays in diagnosis of gallbladder diseases, by Nichols.

X-ray films showed the presence of gallstones in 67 per cent of patients in whom they were found at operation, a surprising percentage. In every case of suspected gallbladder trouble the writer affirms that the patient should have an x-ray examination of the gallbladder, right kidney (lying on the back), the

ureter with opaque catheter in situ, the stomach, duodenum and hepatic flexure of the colon. The differentiation of gallstones from renal calculi, calcified glands, enteroliths, foreign bodies and diverticuli of the intestines filled with barium, is given in detail. Deformities of the duodenum from adhesions, pressure, spasm, are noted. When the gallbladder shows very clearly in x-ray film there is usually thickening of the walls and inspissated bile, both indicative of disease. But more important than all, because not generally appreciated, is the fact that hydronephrosis is often mistaken clinically for cholecystitis. So frequent is this error that Nichols reports 30 per cent of their cases of hydronephrosis had been operated upon through error in diagnosis as cases of chronic cholecystitis or appendicitis.

WIN-LOW

**Anesthesia for Nurses.** By Colonel William Webster, D.S.O., M.D., C.M. Professor of Anesthesiology, University of Manitoba Medical School, etc. Illustrated. 153 pp. \$2.00. C. V. Mosby Company, St. Louis. 1924.

The object of this little volume is to present to the nurse in a concise form the essentials of anesthesia from a nurse's standpoint. In sparsely settled districts, where a surgeon needs an assistant, the nurse may be the only available person for administration of anesthetics. Therefore, nurses intending to locate in such localities might well have sufficient training in this line. Separate chapters are devoted to each anesthetic, with descriptions of their actions and modes of administration, each being well illustrated. There are also chapters on the care of patients both before and after anesthesia.

**The National Health Series.** 20 Vol. 18 mo. Flexible Fabrikoid. Each number about 70 pages. Price per set \$6.00 net; per volume 39c net; 35c postpaid. (Postage prepaid on all orders of 5 or more volumes.) Funk & Wagnalls Company, New York, 1924.

Each of these small volumes contains a wealth of condensed information, dealing with all sorts of subjects useful to the family, relative to health of parents and children. They range from "Love and Marriage" and "The Expectant Mother," "The Babies Health," "The Child in School," to consideration of special diseases such as cancer, tuberculosis and venereal diseases. Each is edited by an authority in his special line.

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The Journal of the State Medical Association of Oregon, Washington, Idaho, Montana and Pacific Northwest Medical Association

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## ORIGINAL CONTRIBUTIONS

### RELATION OF DENTAL INFECTIONS TO HEALTH AND DISEASE\*

WESTON A. PRICE, D.D.S., M.S., F.A.C.D.  
CLEVELAND, OHIO

The problem of dental infections has ceased to be of concern chiefly to the members of the dental profession, since the evidence now at hand so strongly indicates that a great many of the present day medical problems have as a contributing factor dental focal infections. We have arrived at a point in the study of factors involved in health and disease as they relate to the conditions of the oral cavity, where we can express quite definitely the forces involved and the routes through which important changes take place. It seems wise, therefore, that those who are engaged in intensive research work shall from time to time reorient the various phases in the light of the newer knowledge. This is doubly important because of the confusions and misapprehensions of the lay mind which are shared by many of the members of the healing professions.

One of the first fundamental changes in our viewpoint is regarding the route by which mouth infection reaches the system. The contamination of the food by the microbic inhabitants of the oral cavity and the subsequent invasion of the body

through the intestinal wall by the organisms of the mouth is a relatively much less important factor than we had supposed. So far as the intestinal mechanisms of the body are concerned, the interior of the alimentary tract is an external surface. The mucous membrane of the alimentary tract is equipped with a defensive structure which is quite as resistant to bacterial invasion as the external surface of the body, and it is only through breaks in that epithelial structure that organisms may find ingress into the structures of the body.

No part of the alimentary canal is so subject to breaks in this epithelial mucosa as is the oral cavity itself, in which the breaks come almost entirely around the teeth. If, therefore, the organisms from infected mouths would enter the body tissues, they will probably never find so favorable a location again as the one which they are leaving when they pass from the mouth to the stomach. When, however, there are breaks in the mucous membrane of the alimentary tract, such as occur in colitis, organisms and their products may gain access into the structures of the body. Since, however, the alimentary tract is a common habitat for a great variety of organisms which largely gain access with the food, that part of the alimentary tract, like the mouth, can readily become infected without the necessity of the preliminary culturing taking place in the oral cavity.

Oral infections produce their more or less grave

\* Abstract of one of three addresses delivered before Idaho State Medical Association, Boise, Ida., June 20-21, 1924.

effects on the body by entrance to its structures through breaks in the defensive mechanisms of the mouth. These breaks are in the supporting structures about the teeth and the enamel and dentin of the teeth. The direct and indirect injury of dental infections constitutes a factor in human welfare which is probably second to no other interest. While it is impossible to state with definiteness in quantitative terms just what that injury is, either in individual lives or in groups of individuals constituting communities, the evidence seems to demand the conclusion that all human efficiency and comfort are reduced on an average more than 10 per cent; and it is not so important just what that percentage may be as it is that a community recognition shall develop of the need for eliminating, so far as possible, this tremendous human handicap. I shall, therefore, direct our thoughts to the details constituting the evidence for this viewpoint. I shall, if time permits, submit evidence which indicates the following:

(1) That heart disease is a greater problem for community concern and prevention than are tuberculosis, cancer or pneumonia, and an important percentage of heart cases have their principal contributing factor in dental infections.

(2) That other degenerative diseases, such as those of the kidney, digestive tract, muscles and joints, and nervous system have a very much greater causative factor in dental infections than the members of the healing professions have ever anticipated.

(3) That even those other major affections of mankind, namely, tuberculosis, pneumonia and cancer, have in some instances important relations to oral infections.

One of the outstanding incidents in progress in public health matters of the last few decades (during which nearly all the progress has been made) is that the tremendous advance accomplished has been almost entirely in the control of the infectious diseases, such as smallpox, yellow fever, typhoid, diphtheria, etc. Little or no progress has been made in the reduction of the degenerative diseases, for, as a matter of fact, heart disease, kidney involvement, nervous system breaks, etc., are more prevalent with each succeeding decade.

Since Koch demonstrated the organism of tuberculosis, thereby furnishing a dependable means for diagnosis, there have been most efficiently organized and insistently enforced programs of prevention.

This, I say, has come about very largely because of the knowledge of the particular bacterium, and it is of particular importance to note that the great progress within two decades, which has reduced the death rate from tuberculosis approximately one-half, has been accomplished almost entirely by preventive measures and in spite of the fact that even to this day no immunologic treatment has been found that will in any large percentage of cases eradicate the disease once established.

Our newer knowledge of the relation of dental infections to the degenerative diseases would make possible the saving of nearly as many lives by the prevention of either heart involvements or kidney and digestive tract involvements as are saved in our preventive measures for tuberculosis; and yet it is an amazing fact that, notwithstanding a heart once involved is not only greatly handicapped but practically doomed to a greatly lessened and shortened efficiency (and the same is largely true of kidney), almost no effort is being directed specifically toward the prevention of these affections, the entire attention being limited to the difficult, if not almost hopeless, problem of conserving the already injured organ because it is fundamental to life. The point we should stress here is that a heart that has been prevented from having an endocarditis is a hundred times better than one in which the patient has been nursed through a protracted period of incapacity, both because a heart once infected is so likely to be reinvolved and because its unfortunate bearer goes through life with a handicap which reduces efficiency while life lasts, and ultimately nearly always prematurely terminates it.

With regard to this problem of heart infection, when we realize that over one in ten of all deaths in the recorded areas of England and Wales, and also in the United States, is from heart infection, and then realize that this 10 per cent has probably had the life efficiency reduced by more than 50 per cent, since so many of them are children whose entire life efficiency has been destroyed, we see that we are dealing with a factor in this one item that constitutes approximately one-twentieth of all human efficiency; and yet, as I have stated, we have no adequate organized campaign against the development of heart disease as we do against tuberculosis and cancer.

Please do not assume that I think that all heart involvements are caused from dental infections. I shall discuss this problem more in detail as I proceed.

Dr. Martin Raven, Medical Officer, St. Mary's Home, Broadstairs, London, in an article in the *Lancet*, December 8, 1923, had this to state on this point:

"Although the general public has to a large extent learned to appreciate the modern clinical conception of infective disease, and has in consequence been roused to considerable effort in combating tuberculosis and venereal disease, it is nevertheless not much better informed with regard to acute rheumatism than it was 100 years ago. The idea of a "rheum," causing a painful lodgment in the various parts of the body, where it came to rest, is practically identical with the modern lay conception of constitutional rheumatism, and though it is nearly 100 years since Scudamore and Bouillard associated cardiac lesions with rheumatism, even a well educated man of today, unless he has had personal experience of the disease, is usually unaware of that association.

"Yet to the medical man the disease is daily manifest in patients of all ages. Osler alludes to the 'long arm' of rheumatism, in ascribing to it a large proportion of the 50,000 annual deaths from heart disease in this country (England); and recent figures are still more emphatic. Langmead states that in the London County Council schools there is actually more rheumatism than tuberculosis, and that in the special schools for physically defective children one-third of the cases are cardiac. In 1920 the statistics of the Invalid Children's Aid Association show that they had 996 cases of rheumatism, heart disease and chorea in their charge, as compared with 1401 cases of all varieties of tuberculosis."

I am purposely giving the evidence from other authorities before referring to my own extensive research data, in order that you may see that I am not presenting simply a personal opinion. To quote further from Dr. Raven, he states the general position of the disease today:

"The existing uncertainty as to the cause of rheumatic diseases is undoubtedly an important factor underlying the very unsatisfactory staff of officers prevailing in the management of the disease today. One has only to imagine the discovery and bacteriology of a causative organism to be established to visualize the impetus which would be given to prevention, to diagnosis, to properly controlled treatment, and to the education of the public in the disease. There is no doubt that the established bacteriology of *B. tuberculosis* has been a great stimulus to the hygienic and clinical management of tuberculosis; the occurrence of the bacillus in milk and in sputum has had far-reaching effects in diagnosis and in the establishment of preventive measures. Similarly the finding of the organism in the tonsils and decaying teeth of children has emphasized the desirability of tonsillectomy and of dental repair in thousands of cases of tuberculous adenitis of the neck. Yet, though there is no bacteriology in rheumatic corresponding to that in tuberculous disease, a great many facts are nevertheless so well established clinically as to justify systematic attempts to control this disease, similar to those already being made in the case of tuberculosis. In 1900 Caton published a series of 86 cases illustrating the preventability of valvular disease of the heart by treatment of rheumatic endocarditis. In America the Society for the Prevention and Relief of Heart Disease has assumed an influential position, and in this country, in 1923, Dr. Poynton has brought forward considerable proposals, in which education of the public takes a prominent place, for the early detection of

rheumatic symptoms and the consequent prevention of carditis. Finally, during a discussion opened by Dr. R. Miller at Portsmouth, the Council of the British Medical Association has been recommended to appoint a special committee to consider the best steps to be taken to combat the disease."

Before proceeding with this discussion I wish to prepare you for a new viewpoint. Much progress is always made by relating data and this attitude of mind is most helpful. It is exceedingly difficult, however, to anticipate all the factors involved and, therefore, there is great tendency to make incorrect or incomplete associations. To illustrate:

You will frequently see in literature reference to the fact, accompanied by statistical data, indicating that periodontoclasia, or so-called pyorrhea alveolaris, is contagious, on the ground that it is generally found that the different members of families all tend to have it or all tend not to have it. My researches have demonstrated that this association of a common experience is related to inheritance of common factors of physical constitution, which predisposes to this condition. I shall not have time to dwell on this here, since I have dealt with it in such extensive detail in my recent work on *Dental Infections*.\*

In that work I have also shown that in the study of the prevalence of heart involvement in 681 families there were more cases of heart involvement in 100 of the families than in the other 581. In other words, when heart involvement appeared in one member of the family, it nearly always appeared in other members, and very often in several. This, of course, is not new, since we have always heard of heart disease running in particular families. The item which is new, however, in my studies is that the susceptibility for heart involvement is a factor quite independently inherited from other lesions of the rheumatic group; in other words, this inheritance is a unit character relating to the various tissues of the body. This is illustrated in the following table, taken from Chapter IV:

With this in mind, I wish to quote again from Dr. Raven's article, in which he discusses the problem as to whether rheumatic disease is infectious.

"Newsholme, in 1895, spoke of rheumatism as an acute infectious disease, having an epidemic prevalence in irregular periodicity. It may be asked whether it can be regarded as an infectious disease today. It is now generally admitted that phthisis is an infectious disease. W. St. Lawrence, in New York, made an investigation into the incidence in families

\* *Dental Infections, Oral and Systemic, Vol. I. Dental Infections and the Degenerative Diseases, Vol. II.* Published by The Penton Publishing Company, Cleveland.

## DOMINANCE OF SPECIAL TISSUE LESION IN BOTH PATIENTS AND FAMILIES (TEN)

Group	No. of Males	No. of Females	No. of Lesions in Ten Patients							No. of Lesions in Families						Local Expressions of Dental Infections								
			Tonsils	Rheumatism	Heart	Neck	Nerves	Internal Organs	Special Tissues	Tonsils	Rheumatism	Heart	Neck	Nerves	Internal Organs	Special Tissues	Total		Caries	Pyorrhoea	Open	Locked	Rarefying	Condensing
																	Severe	Severe & Mild						
Rheumatism	2	8	5	10	2	6	4	4	3	8	59	7	9	19	19	10	104	131	9	1	1	6	2	3
Heart	3	7	7	6	10	5	7	3	8	12	24	57	6	25	13	19	121	156	10	1	2	8	3	5
Nerves	12	8	5	6	2	7	10	7	7	10	15	9	10	142	28	19	180	233	9	3	3	9	5	5
Internal Organs	2	8	6	4	0	6	9	10	6	6	13	9	10	30	90	12	136	170	7	3	3	7	4	3

\* Type of susceptibility—*inherited*.

of rheumatism and tuberculosis. In 100 families, in each of which at least one member had suffered from a manifestation of acute rheumatism, he found the percentage of cases of actual rheumatism among all the exposed persons to be 14.8; a similar investigation in respect of tuberculosis families, in each of which at least one member had active tuberculosis, revealed the percentage of actual cases among persons exposed to be 14.6, and he points out that it is difficult to evade the proposition that rheumatic disease, and therefore cardiac disease, is communicable to a degree not generally imagined!"

I wish to stress two points here in passing: First, that if infections capable of producing heart involvements are capable of being transferred from one to another, it will be those individuals, who by inheritance have susceptible tissues, who will be involved, and, therefore, the importance of this second observation: It is exceedingly important that these susceptible individuals shall not have carious teeth, through which the invasion of a strain, carrying with it elective localization, may gain access directly to the circulation and therefore to the heart, for I consider the entrance of this type of infection through carious teeth as being a far more accessible route than through the alimentary tract by the contamination of food, or through the mucous membrane of the nose and respiratory tract.

With regard to the matter of the reinfection of the heart, Dr. Raven reports on a group of eight children who received from six to twelve weeks quiet life by the seaside.

"They had all originally had chorea; in no case was tonsillectomy performed. They were reexamined after at least six months' life in London and daily school attendance, the results being as follows:

- 3 cases, heart normal; no more chorea.
- 1 case, heart normal, but chorea recurred.
- 3 cases, signs of myocarditis (excitable beat and dilatation, fresh chorea).
- 1 case, aortic regurgitation.

"Out of eight cases, therefore, who had had a short stay on the seacoast, five showed recurrence of rheumatic symptoms."

It is fair to suppose that, if these children did not have tonsillectomies, they did not have dental

care. Note that five of the eight, or 62 per cent, of these susceptible individuals had already seriously broken in six months when taken to that environment. Do you not rebel in your very heart against the subjecting of these poor innocent but susceptible creatures to this almost inevitable doom? And yet it is just what the world is doing with its young life today. In the light of our extensive researches I would say it is practically a physical impossibility for a child with a high susceptibility to heart involvement to carry infected deciduous teeth and live in an environment of chilling dampness and lack of sunshine and escape heart infection, as these clinical data have demonstrated. The great majority of such children are as surely doomed to handicap, if not premature death, as the child that is exposed to smallpox, diphtheria or tuberculosis, for which latter we have a public conscience, but for the former we are still largely in our primitive state.

I must not spend too much time in the discussion of heart involvements, but before leaving it I should discuss the newer view of the bacteriologic phase of these disturbances. This is not the time and place for a detailed analysis of the different types of carditis and the various contributing factors. You are doubtless all familiar with cases of heart disease caused by pneumococci, staphylococci and gonococci. We are particularly concerned with the two types which are referred to as the *acute* and *subacute* forms, cases lasting for six weeks or more being classified as the *subacute* by Libman who is one of our splendid authorities. The subacute cases constitute a large majority of heart involvements. Libman states that the subacute cases are due in about 95 per cent of cases to the so-called streptococcus viridans. The remaining 5 per cent are nearly all caused by the bacillus influenza.

In this regard I wish to call your attention to two outstanding items of the newer data. In our cultures from dental focal infections, taken from the tooth structure or pulp chamber, more than 95 per cent have proved to be streptococcus viridans, which is a group name for the different strains of streptococci which produce green colonies when grown on blood agar. From a few of these cases we have grown an hemolyzing streptococcus. Libman states: "The cases of bacterial endocarditis that run an acute course are due most commonly to hemolytic streptococci, pneumococci, staphylococci, and the gonococcus, but can also be caused by a great variety of other organisms."

We have frequently found, as I have demonstrated in the work above referred to, hemolyzing streptococcal strains in vital pulps which, when inoculated into animals, produced large percentages of death from heart involvement. In one case thirty animals were inoculated and 93 per cent developed acute endocarditis, from which the boy was suffering from whom it was taken and from which he died within six months. The pulp of this tooth was nearly but not quite exposed by deep caries in a first permanent molar, also almost normally vital though infected, and had a history of one attack of acute toothache. This was his first attack of heart involvement; and had I time to go into detail, the evidence seems strongly to indicate that the dental infection was the cause of the boy's death.

There is a phase of this problem of heart involvement that is very important and should be discussed at this time. I am meeting weekly in business and on the streets, patients who are carrying on business with hearts functioning so splendidly that they appear to be relatively normal, who had so serious heart involvements as to make their lives despaired of, but whose improvement seems to have been entirely due to the removal of dental focal infection. With regard to this new emphasis on the hopefulness of helping many of these already affected individuals, Libman states in the conclusions of his article in the *Journal of the American Medical Association* for March, 1923, as follows:

"It is evident that I have presented the subject of the characterization of the various forms of endocarditis in a very broad way only. It is realized that the various subjects that have been discussed must later be taken up in a more detailed fashion. One thing is clear. It is evident that the disease which was considered rare, subacute bacterial endocarditis, is now recognized as one of the common diseases. Of great interest is the change in our point of view. It was supposed to be a practically uniformly fatal disease. Now we are observing more and more partial or complete recoveries. We find that very mild

cases exist, and that there is a recurrent form of the disease. In other words, the interest is shifted toward the question of healing. It will be of the greatest value, if an active campaign is undertaken for the purpose of preventing this as well as other forms of endocarditis."

Let us call your attention to the fact that, since it has not been recognized that the most prolific source of infection for the production of cardiac infection was from dental sources, since 50 per cent of all individuals carry teeth potentially capable of doing this at most any time that their resistance is lowered, and probably over 90 per cent of individuals have such a source at some time during their lives, we are thrown back upon the problem of inherent defense, a factor that we have not appreciated in the past. I am not presuming to review these various phases in exhaustive detail but only sufficiently to emphasize their individual importance, and I shall again refer to the heart involvements in connection with other phases of this discussion.

We shall next discuss the oral focal infections in relation to arthritis. This affection presents in both acute and chronic forms, and the chronic forms are of two distinctive types—the *degenerative* and the *proliferative*. Ely of San Francisco, in discussing The Second Great Type of Chronic Arthritis, in the *Journal of the American Medical Association*, November, 1923 refers to its prevalence in the following words:

"In the orthopedic clinic at Stanford it is by far the most frequent disease with which we have to deal. Established always with the roentgen rays, its diagnosis comprises more than one-tenth of the diagnoses in our clinic."

He further states that:

"A very large proportion of the so-called sciaticas owe their origin to spinal arthritis."

With regard to the prevalence of arthritis, some clinicians have become very positive in their conviction that the teeth play not only an important part but by far the most important part as a source of focal infection. Sir William Willcox and Dr. Beddard, both of England, place as high as 90 per cent of the cases of non-specific infective arthritis which are due to infections arising from the teeth. It is, indeed, difficult to state in any particular case that any one source of infection has been the only source. My own extensive clinical practice, specializing in the diagnosis and treatment of systemic involvements arising from dental focal infections, has brought me to feel that in many communities the percentage is as high as placed by Drs. Willcox and Beddard.

(TO BE CONCLUDED)

THE CONSTANCY OF FIXED SYMPTOMS WITH BONY ABNORMALITIES OF THE LUMBOSACRAL SPINE\*

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The observations of recent years have established a considerable group of anomalies and disorders of the lumbar and sacral spine. Bony pathology in this region is known to be the cause of local and remote pain and distress in the back, the pelvis and the lower extremities. The object of this paper is to put on record a careful review of a group of selected cases that have been studied from the angle of the relation of the various fixed symptoms, such as backache, sacral pain, sacroiliac distress or sciatica, to the various types of bony anomalies. The source of the material used for this study is from the west with its western types. A comparison with other sections will be interesting.

In order to ascertain the relative frequency of backache and pelvic pain, many thousand routine histories were reviewed with interesting findings. Discovery was made that of every hundred examinations in a general diagnostic clinic, with the wide range of chronic disease, an average of 4.7 per cent of the cases, or nearly one case in every twenty, had a prominent symptom of backache or pelvic pain.

Abdominal, visceral, renal or muscular causes were responsible for slightly less than three-quarters of the complaints. These cases were all rejected, and in this review it should be distinctly understood that these latter causes of lower spinal pain and sciatica are excluded and are in no way under discussion. Care has been taken to include in this article only cases of actual visible or palpable pathology, or cases of preponderating symptoms referable to the lumbosacral spine, after the most painstaking exclusion of visceral or muscular etiology. I realize that in nearly every discussion of these matters new points are brought up, enlightening us upon visceral causes of lower backache. Error is always possible. But this attempt aims to simply classify the findings in three hundred and three actual and carefully recorded cases, where in the judgment of a consulting group there is a definite relation of symptoms to actual bony or arthritic pathology.

We shall attempt to show that definite, constant symptoms, such as sciatica or localized pelvic pain,

accompany definite bony defects. We shall show that symptomology and pathology differ with the sex, and with the environment of the patient. It will be seen that we deal only with congenital defects, with chronic osseous changes due to reproductive life, the strains and temper of the female pelvis, and with the occupational pathology (exclusive of traumatisms) in males.

This series consists of 303 cases.

NO PATHOLOGY

First, let us dispose of a group of sixteen cases, or five per cent of our total, in which no pathology could be discovered. In most of these cases visceral and muscular etiology were a second time ruled out, leaving us with pronounced backache, and in twelve cases severe pain in the region of the sacrum, that must have originated in the bony structures. We can only say that with us, at this time, we cannot yet read the findings that may be present. The recent work of Adson suggests a search for special tumors possibly overlooked. A summary of this group is as follows:

Males 10, females 6 cases.	
Lumbar backache pronounced.....	11 cases
Pain in sacrum and sacroiliac joints	12 cases
Pain in sciatic trunk.....	2 cases

LUMBAR RIBS

Lumbar vertebrae bearing so-called ribs with more or less normal articulations are rare. Our series produced but six cases or less than two per cent of the total. Inasmuch as there is a great variation in the size and shape of the lumbar transverse processes usually without the production of symptoms, except with the 5th lumbar which we will consider later, it might be expected that these small lumbar ribs would otherwise be the cause of little irritation. All our cases appeared in men. The three cases suffering symptoms were laborers engaged in hard physical labor. It is quite likely that the protrusion of bone into the lumbar muscles mechanically irritated. Summary:

Males 6, females no cases.	
Lumbar backache pronounced.....	3 cases
No symptoms .....	3 cases

LUMBAR ARTHRITIS, HYPERTROPHIC AND ATROPHIC

The largest single group in our series consisted of fifty-four cases, or 18 per cent of our total, of lumbar joint derangements. Hypertrophic arthritis usually accompanying a general arthritis of that type predominated. However, there appeared a few cases showing absorptive types, where whole intervertebral discs had disappeared and where absorptive changes had taken place in the vertebrae.

\*Read before Multnomah County Medical Society, Portland, Ore., March, 1924.

The later types appeared in a proportion of one to 3.3 with the former (figs. 1 and 2).

Nearly every case presenting this pathology complained of symptoms. Very frequently the pain was disabling. Sciatica in fifteen cases was the chief complaint and in several cases that were empirically treated with success the bony changes in the spine were not extensive.



Fig. 1. Hypertrophic arthritis. General throughout the lumbar spine.



Fig. 2. Atrophic Lumbar Arthritis. Simple absorption of interosseous structures between 3rd and 4th lumbar.

However, the predominating symptom of lumbar arthritis is local pain near the lesions. Summary:

Males 35, females 19 cases.	
Lumbar backache pronounced.....	32 cases
Pain in sacrum and sacroiliac joints.....	15 cases
Pain in sciatic trunk.....	15 cases
No symptoms .....	3 cases

SIX LUMBAR VERTEBRAE

An extra lumbar vertebrae in each case with full twelve dorsal vertebrae appeared in nineteen cases, or 6.2 per cent of our total (fig. 3). The extra bone is much more common in women. The symptoms are usually very mild, and never were accompanied by sciatica. In this series about half of the cases had definite symptoms of sacral and sacroiliac pain. We are not at all sure whether this sacral



Fig. 3. Six Lumbar Vertebrae with full complement of dorsals.

pain is a real complication, or whether it is a postural entity, due to the lengthening out of the torso by the presence of the extra vertebra. Summary:

Males 6, females 13 cases.	
Lumbar backache pronounced.....	15 cases
Pain in sacrum and sacroiliac joints.....	9 cases
Pain in sciatic trunk.....	0 cases
No symptoms .....	4 cases

IMPINGING TRANSVERSE PROCESS FIFTH LUMBAR

Deception is so common in well intended x-ray studies of the fifth lumbar vertebra, that we have made it a point to only venture an opinion upon pictures made with our own standard technic, or upon those made by others that grossly show the erosive results of impingement. Long or even misshapen transverse processes on the fifth lumbar vertebra do not necessarily have to produce trouble. If these is actual impingement, symptoms sooner or later seem to appear (fig. 4).



Fig. 4. Long impinging transverse processes. Probably a congenital type with blunting of the processes.

Our patients with this disorder numbered 31 or about 10 per cent of our series. There were five times as many males as females. The usual complaint is a severe disabling pain in a definite, local spot close to the impingement.

Summary:

Males 26, females 5 cases.  
 Low lumbar pain .....25 cases  
 Pain in sacrum or sacroiliac .....16 cases  
 Pain in leg or sciatic ..... 9 cases  
 Nosymptoms 3 cases

DEFORMITY OF THE SACRUM WITH CONSEQUENT CHANGES IN THE SACROILIAC JOINTS

Sacral deformity appeared in 33 cases, comprising about 11 per cent of our total (figs. 5 and 6). Sacral defects probably are acquired. They appear in the female skeleton ten times as often as in the male. The commonest defect is asymetry and anomolies of the sacrum and consequent sacroiliac joint distortions. Here, too, x-ray fallacies must be guarded against. The most satisfactory mode of detection of sacral deformities is the physical examination, both graphic on the back, and by means of pelvic palpation. A structural change producing a total scoliosis is often noted. The interesting fact connected with our study of this condition was the discovery that sacral deformities were an accompaniment of hereditary obesity. Summary:

Males 3, females 30 cases.  
 Lumbar backache pronounced.....19 cases  
 Pain in sacrum or sacroiliac .....15 cases  
 Pain in coccyx ..... 3 cases  
 No symptoms ..... 2 cases  
 Main complication, hereditary obesity.



Fig. 5. Deformity of Upper Segments of Sacrum with flaring transverse plates.



Fig. 6. Usual Deformity of Sacrum with bifurcation of sacral spinous process.

SACROILIAC ARTHRITIS

We believe that the sacroiliac synchondrosis partakes of the usual types of septic and infectious arthritis in very much the same manner as true joints. In general arthritis it often is troublesome. Our series brought to light 27 cases, or 8.8 to the hundred (figs. 7 and 8). There were 24 female sufferers to 3 male. Our findings convince us that in the infectious types, such as tuberculous and influenzal, far greater chronic bony changes without the joint take place in the ileum than in the sacrum. The findings in the physical examination of a "position Hanchee," or a tilting of the body away from the affected joint, persists in the x-ray plates taken recumbent. Outside of this point and a noticeable widening of the joint, the x-ray is of little assistance in reaching a diagnosis, until gross destructive changes have taken place. There is local distress in a definite spot and real symptoms in every case. Summary:

Males 3, females 24 cases.  
 Backache pronounced .....18 cases  
 Local pain in sacrum or sacroiliac joint .....27 cases  
 Pain in thigh or sciatic ..... 9 cases  
 No symptoms..... 0 cases  
 Main complication, general arthritis.



Fig. 7. Sacroiliac Arthritis with position Hanchee persisting even in the recumbent position. This is a tilting of spine away from the involved synchondrosis.



Fig. 8. Infectious Arthritis of both sacroiliacs. Thickening more marked in the ileum than sacrum as is usual.

DEFORMITIES OF FIFTH LUMBAR

The fifth lumbar is the most difficult structure in this study to interpret because we know so little of the normal. The distortions of shadows must always be borne in mind, and only gross anomalies with abnormal distortions be considered. The fifth lumbar should be x-rayed in its own axis and alone. Trauma plays a big part, as well as he-

redity. This is a male condition appearing largely in laborers, and is complicated with massive transverse processes, also found in the same working classes. The symptoms are not so definite, as will be seen in the following summary:

Males 21, females 8 cases.

Lumbar backache .....	18 cases
Pain in sacrum or sacroiliac joints .....	11 cases
Pain in thigh or sciatic.....	6 cases
No symptoms .....	2 cases

Main accompaniment, massive transverse processes.

SACROILIAC MOBILITY AND STRAIN

In entering a controversial realm, it requires considerable conviction to report 37 out of 303 cases as sacroiliac instability, while others dare go no farther than classify the same condition as sacroiliac strain. We believe that with the patient prone



Fig. 9. Findings in case of Marked Instability of Sacroiliac Synchondrosis. No marked anomaly of pathology present.



Fig. 10. Tracing of Ankylosed Hip, showing hypertrophy of posterior shelf of ilium in special continued strains of the sacroiliac.

and relaxed, we have often detected a varying degree of mobility, by using an extreme hyperextension test. We believe that, while the sacroiliac synchondrosis is so constructed that gross misplacements are impossible except as accompaniments of severe trauma, yet the false joint is capable of a teetering motion that is palpable in contrast to the usual fixity of the sacrum and is due to a ligamentous laxity (figs. 9 and 10). At all events, either surgical or mechanical fixation relieves the entity under discussion. So we shall include this 12.2 per cent of our series. A prominent disclosure of our study was the fact that nearly all cases complain of lower lumbar pain rather than pelvic discomfort. Again, nearly one-half of our cases came to us because of sciatica. The condition is

preponderately a female disorder. The x-ray is of little value, except in long standing cases, where joint thickening is noted.

Males 3, females 34 cases.

Pain in lower lumbar spine .....

Pain in pelvis, sacrum or sacroiliac.....

Pain in thigh or sciatic trunk.....

No symptoms 2 cases

Main complication, general lax joints.



Fig. 11. Sacralization of Fifth Lumbar Vertebra and fusion of processes.



Fig. 12. Sacralized 5th Lumbar Vertebra, accompanying general hypertrophic arthritis.

	OCCUPATIONAL	REPRODUCTIVE
	FEMALE	MALE
SACROILIAC MOBILITY OR STRAIN.....	34	3
DEFORMITY SACRUM OR SACILIAC JOINT.....	30	3
SACROILIAC ARTHRITIS.....	24	3
SIX LUMBAR VERTEBRAE.....	13	6
LORDOSIS—ABDOMINAL PTOSIS.....	4	2
LUMBAR RIBS.....	0	6
IMPINGING TRANVERSE PROCESSES.....	5	26
DEFORMITIES FIFTH LUMBAR.....	8	21
LUMBAR ARTHRITIS, ATROPHIC AND HYPERTROPHIC.....	19	35
DEFORMED AND SACRALIZED FIFTH LUMBAR VERTEBRA.....	12	23

SACRALIZED FIFTH LUMBAR VERTEBRA

Fusion of the structures of the fifth lumbar vertebra with the sacrum was discovered in thirty-five cases, or 11 1/3 per cent of the total (figs. 11 and 12). It probably is more common than that, as until more recently we were unwilling to believe our x-ray findings, believing them to be distortions. This is a male condition and is found in working men. The supposition is that hard youthful labors and trauma assist the ankylosing process. A little less than half the cases were absolutely symptomless, and even when the abnormality does produce symptoms, they are mild. It was noted the sacralized fifth lumbar vertebra often bore massive transverse processes that apparently ankylosed with the ileum. Summary:

- Males 23, females 12 cases.
- Lumbar backache pronounced.....15 cases
- Pain in sacroiliac joint ..... 8 cases
- No symptoms .....13 cases
- Main complication, general arthritis.

MOBILE SYMPHYSIS PUBIS

One series revealed four cases of mobile symphysis pubis or 1.3 per cent. All the cases were in women and produced backache and pain in the sacroiliac joint.

EXTREME LORDOSIS

While we have excluded static troubles from posture from this review, we saw fit to include six cases of extreme lordosis, where we believed the symptoms of severe backache to be due to the pro-

duced bony changes. Most of these cases were in obese adults, also suffering from abdominal ptosis, which might in itself have augmented the backache. We include them because we cannot exclude them. Two of the cases were suffering from severe sciatica, and one was bed-ridden with it. Sciatica is not a symptom of static posturals. Summary:

- Males 2, females 4 cases.
- Lumbar backache pronounced..... 6 cases
- Pain in sciatic nerve..... 2 cases
- No symptoms ..... 0 cases
- Main complication, abdominal ptosis.

CONCLUSION

1. There are types of bony defects particularly prone to appear in women, that produce local and referred pain, just as there are defects with symptoms peculiar to the male.
2. The vocations and sex life of the two sexes are the determining factors in the preponderance of certain defects that definitely select the male and female skeleton.
3. Knowing the sex selectivity and the relation of complications, and the location of the local pain to the pathology, our first search for the causative agent should be toward the commonest and expected causes.
4. A study of the common pathology of the lower spine and pelvis is urged, that our knowledge hinted at tonight might be increased.

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## IDIOPATHIC GENITAL GANGRENE CASE REPORT AND BRIEF COMMENT\*

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J. J. K., age 41, white, male, married, proprietor wholesale tobacco store. While enjoying excellent health became suddenly ill September 20, 1924. His family physician was called, and found he had a chill, followed by a temperature of 101.5°. The onset was sudden and insidious. He had sore throat and cough, and there was present on the uvula a small patch that suggested a commencing diphtheritic process.

His family physician had called in a throat specialist, who took a swab off the uvula, sent it to the laboratory for report, and treated the throat locally. The laboratory reported a pneumococcus infection. The next day his temperature had risen to 105.5°, pulse rapid, and the symptomatology suggested a marked general infection and sepsis. His scrotum was markedly swollen and discolored over the lower central part. The next morning he seemed more septic and toxic, with chill, fever, rapid pulse, dry tongue, marked prostration, and more or less delirium. His condition growing worse he was removed to the hospital the morning of September 23, about 12:50 p. m.

I was called in consultation by the family physician and at that time his chart showed he had a temperature of 105.8°, pulse 98, respiration 45. By 4 p. m. the temperature had mounted to 107°, pulse 124, respiration 48. His scrotum was six times normal size, swollen, distended, edematous and painful. He was tender over the groins, and the cords were swollen and tender. The skin of the scrotum was very discolored and ecchymotic, tense, purple, and a moist desquamation was occurring in various areas. A bloody serum was seen exuding from the raw surfaces. The whole lower portion of the scrotum was becoming gangrenous, and by palpation was boggy and slightly crepitant. His temperature from this time on was typically septic in character and ran from 100° to 105°; pulse from 120 to 145 and respiration from 28 to 40. There was severe headache, marked weakness and prostration, cyanosis, profuse sweating, dry tongue, sordes on lips, teeth, gums and tongue, tongue cracked, carphology, subsultus tendinum, marked delirium, very toxic, and difficult to control, with severe constitutional depression. The penis was enormously edematous to body junction. Urination was markedly disturbed, varying from retention to incontinence. Fecal incontinence was present.

His subjective history at onset was negative, as far as any disease or injury of the genital organs were concerned. He had never had any previous urinary troubles. The personal history shows he had only a few of the ordinary diseases of childhood and had never been sickly as a child. During his adult life he has been exceptionally healthy, and has taken good care of himself. His habits have always been good. No drink habits or any venereal disease.

He is a well built, muscular man, of more than the ordinary intelligence, ambition and business ability. The blood pressure on admission was 150 mm. systolic, 90 mm. diastolic. It remained about this registration until death. The pulse varied from 100 to 145 per minute, the respirations from 25 to 50 per

minute throughout the attack. The temperature varied from 100° F. to 107° F.

Urinalysis: The laboratory report showed amber colored urine, alkaline reaction, specific gravity 1020, albumin three plus, no sugar. The microscopic examination showed many granular casts, some pus cells. Blood examination: 5,072,000 erythrocytes, 23,200 leukocytes. The bacteriologic report on the throat culture on first day was gram positive diplococci, with the morphology of pneumococci, with a diphtheria-like grouping in some places. The following day the report showed short bacilli, and diplococci, with grouping typical of epidemic diphtheria. Blood cultures were taken on two different days and in both instances showed no growth.

The patient died on the fifth day from the onset of the disease, from profound toxemia. From the extent of the gangrenous process manifest on careful inspection postmortem, if the man had lived a few days longer, both the penis and scrotum would have sloughed to corpora, gonads and cords, and would have involved some of the tissues of the suprapubic and perineal regions.

In studying the literature of this type of gangrenous process, one who is observing readily perceives that he is dealing with a separate and distinct clinical entity from the common and usual form so often encountered elsewhere in the body. In quite a large percentage of cases of this classification the origin of the gangrene is unknown, and no portal of infection can be found. But not infrequently an atrium of entrance for the virulent organisms can be easily established. But whether of known or unknown origin, the history, onset, clinical course, symptomatology and termination are remarkably characteristic and uniform. The history universally shows that this disease attacks the apparently healthy adult male suddenly and without warning. The explosive septic onset in the physically strong and well is one of the chief characteristics of this morbid entity. The rapidity and virulence of the systemic infection is startling, and in all fatal cases death is seemingly due to a profound sepsis or toxemia. The local genital pathology appears early, and runs a swift and dramatic course. From the onset to complete gangrene may be a question of only a few days, averaging most commonly about eight days for the gangrenous process to have reached its completion and have sloughed. It may do so in even the space of forty-eight hours. While cases are recorded that required twenty-eight days for a complete gangrene and sloughing, the great majority seem to run a much speedier course, and generally eight to ten days finds the gangrenous process has reached its limitation and stopped and the necrotic mass is cast off.

The gangrene in this clinical grouping quite generally invades only the superficial structures, rarely extending into the deeper tissues. In the purely

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scrotal type all the structures down to the tunica vaginalis testis slough, but the gonads and cords almost invariably remain uninvolved. In penile involvement all the skin and subcutaneous tissues, down to the true sheath of the corpora, are cast off over the area involved. Where the deeper structures became gangrenous, it is only small areas that heal rapidly. When the line of demarcation becomes fully established, the gangrenous process has reached its limits and there ceases. Sloughing commonly occurs soon after the mortification is complete. Every case varies somewhat in the extent of the gangrene and the tissues involved, but usually in cases of this type all or a great part of the scrotum and penis are lost, and the process may spread to the groin, suprapubic area, perineum and abdomen. The rapidity of spread locally seems to bear no relation to the mortality or recovery, but the systemic sepsis or toxemia is the cardinal index of prognosis and determines the fate of the patient.

**Etiology:** It is universally agreed by all clinical observers that the disease is essentially an infection, but the true causative organism is yet unknown. The bacteriology of this condition is therefore a problem for the future. The organisms found and identified by various observers are streptococcus, an aerobic diplococcus, a facultative anaerobe, anaerobic bacillus, a pseudodiphtheric bacillus, a fusiform spirillum (Vincent's) and a Klebs-Löffler bacillus. A number of the more experienced observers are of the opinion that the infection is of anaerobic origin.

The edema and gangrene occur under two types, one with œrosis and the other without. In other words, the infecting organism may be gas-producing or not, or again emphysematous crepitation may be present or not. The disease is due unquestionably to the action of the bacteria, but whether the result of bacterial toxins or obstruction of the genital blood supply caused by bacterial inflammation is a question. Many French clinicians believe the local condition is pathologically and essentially a lymphangitis.

**Symptoms:** As regards the symptomatology, the sudden and explosive onset is followed by an equally rapid development of severe constitutional depression. All the systemic symptoms are characteristic of infection and sepsis and progress with astonishing swiftness. Usually the condition is ushered in with a chill, rapidly mounting fever, and marked prostration, rapid pulse, restlessness, quickly followed by nausea, vomiting, urinary retention, dry tongue,

delirium, headache, and nervous jactitations. The local genital involvement usually appears on the second day. It starts as an edema of the scrotum and penis or both, and becomes enormously swollen, tense, distended and more or less discolored. Later the process resembles a lymphangitis, with inflammatory reaction and the skin becomes a purple to black hue, which spreads to all surfaces involved, finally showing moist desquamation, with bloody serous discharge and later some drying and wrinkling of the cuticle—all evidences of beginning mortification. The testicles and cords are often left entirely bare when the massive sloughs come away. The penis, too, may suffer the same fate, nothing being left but the corpora in the true sheath. The spread of the gangrene may be beyond these limits even, and a necrotic mass may separate of appalling extent.

The mortality is high in this strange and unusual disease, being variously estimated at 23 to 33 per cent by the various observers. The regeneration of all lost parts is remarkably rapid, once all sloughs are separated and granulation started. A new scrotum and penis is generally regenerated that differs but little in appearance and function from normal.

**Prognosis:** All depends upon the infection and toxemia. With the entire sloughing of the large necrotic mass and the patient capable of reacting, with his defensive powers of recuperation not exhausted, recovery may be expected. But where sepsis deepens and all the powers of life are waning, the prognosis is grave and ominous, no matter what the condition of regeneration and healing may be.

**Treatment:** Until more is known of the cause and pathology of this morbid entity, the physician will be compelled to treat his cases symptomatically and empirically, as far as the constitutional symptom-complex is concerned. The infection and sepsis will always dominate the clinical picture and be its most important and vital feature, as far as any treatment is concerned. In fact, the character of the systemic infection and sepsis determines its prognosis, and it is the paramount factor of therapy as regard mortality and recovery.

As regards local therapy certain logical principles seem thoroughly indicated. The massive size and weight of the external genitals certainly suggest the necessity of support. The parts should be elevated and put at rest, both for the comfort of the patient and as a prophylactic measure for the hemorrhage which may occur during the late sloughing process.

As the testicles and cords are swollen, tender and painful during the edematous and gangrenous process, any drag or pull on these structures aggravates the pain and soreness of the inflamed tissues, and renders the patient more restless and nervous. Without support the danger of hemorrhage, as the slough separates from the healthy tissues, becomes active or potential. This active hemorrhage needs constant watching, as many cases have been almost exsanguinated before the attendant became aware of its occurrence. The hemorrhage demands immediate control by hemostat and ligature. Proper support can be accomplished by a T binder or crossed perineal bandage, which also holds the dressings in place. A large, moist, gauze dressing kept continually soaked in some weak antiseptic, such as potassium permanganate, or sodium hypochlorite, is probably as good as anything to apply topically to involved areas, whether incised or not.

The question of surgical intervention seems to be an open one. Two schools of thought and opinion oppose each other. One advocates that, as the gangrenous process is so destructive and rapid, nature will quickly establish sloughing and drainage, and it makes no difference in the final outcome whether nature or the surgeon does the work. The other school ardently advocates early incision and free drainage, their idea being that pent up edematous fluids need free drainage as much as pus cases. Early evacuation, as soon as edema is manifest, relieves pain and tension, and gives hope of less extension of the gangrene with its systemic absorption, and has a tendency to modify the systemic toxicosis and sepsis. When operative intervention is adopted, the incisions should be long and deep, entirely through the tissues involved. This usually means to the gonads and the cords and the true sheath of the corpora over the entire extent of the edema. This early free drainage is the sine quo non of all local treatment. Nature should be allowed time in removing the dead mass. Traction and pulling on the sloughs is hazardous and bad practice. Due to the horrible odor from the massive mortified parts and the profuse suppuration, it may be expedient to remove as much dead tissue as is possible, where the blood supply is obliterated.

Many able investigators have gathered together the scattered reports of the world's literature on this rare and peculiar disease, and all case reports prove it to be essentially a systemic infection. Consequently its rational therapy would seem to rest

upon a biochemic basis. Its solution would seem to require the combined services of microbiologist, the immunologist, physiologist, pathologist, synthetic chemist, scientific clinician everywhere throughout the world.

When we consider what has been accomplished in such diseases as lues, general spirochetal infections, trypanosome infections, bilharzia infections, yaws, relapsing fever, kalar-azar, Bagdad boil, etc., we can but feel hopeful that this disease too can be rendered "definitely curable or brought within the range of effective treatment." The problem can only be solved by a better understanding of the fundamental biologic principles upon which nature builds her effective defensive mechanism.

### EPISPADIAS IN THE MALE

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Epispadias is an unusual congenital malformation of the external genitalia, in which a portion or all of the roof of the urethra is absent, the urethral canal being represented by a furrow of mucous membrane on the dorsum of the penis in the male or an open trough lined with mucosa leading from



Fig. 1. Shows the upward curve and shortened penis, covering the orifice of the bladder (before operation).

the bladder into the vestibule in the female. According to Baron, who is quoted by Davis<sup>1</sup>, epispadias occurs only twice to each three hundred cases of hypospadias, which Gianturco<sup>2</sup> found in 0.5 per cent of males examined by him and Bouisson<sup>3</sup> estimated as occurring once in each three hundred males. It occurs with greater frequency in males

than in females, Lower<sup>4</sup> being able to collect only forty-three reported instances in women.

While the condition may occur alone, it is not infrequently associated with other malformations, such as absence of the prostate, imperforate anus, urachal fistula or abnormalities of the corpora cavernosa. The complicated exstrophies of the bladder and often the simpler forms have an associated epispadias in conjunction with more severe malformations, such as spina bifida and absence of the pubic arch. In those cases in which the entire length of the penis is involved, there is always a deficiency in the neck of the bladder and the sphincter, with resulting incontinence, which may be partial or complete, more often the latter.

There are several grades of epispadias, varying according to the degree of the defect as follows. It may involve (1) only the glandular portion of



Fig. 2. Shows penis drawn out, exposing the spread-out urethra, flattened penis and large ureteral orifice (before operation).

the penis, glandular epispadias; (2) the penile portion, penile epispadias; (3) the glandular and a portion of the spongy urethra, spongoglandular epispadias; (4) the entire urethral canal from the meatus to the neck of the bladder, complete epispadias (White and Martin<sup>5</sup>).

The abnormal penis appears as a short, broad, tongue-like process, curved upward, with its upper surface held in apposition to the anterior abdominal wall (fig. 1), so that the opening of the urethral orifice, which is sunk deeply in the pubic region, cannot be seen until the organ is straightened out by traction (fig. 2). The upward curve of the deformed organ is due to contraction of the corpora cavernosa, so that the penis resumes its unusual position as soon as the traction is released, again

covering up the urethral opening. This is usually relaxed and large, easily admitting the index finger without difficulty.

In complete epispadias the accompanying incontinence of urine keeps the region moist and the skin excoriated and angry-looking and frequently covered with pustules. The urine often trickles constantly or flows only when the patient is erect, or sometimes it comes in spurts which are sprayed up against the abdominal wall. In complete epispadias the urethra is represented by a furrow of thin mucous membrane which blends on each side with the skin of the penis and disappears beneath a crescentic fold of tissue at the pubes. This furrow is marked by the irregularities of the urethral floor, the openings of the small mucous glands of Littre and the small pockets or recesses into which they empty. The prepuce is usually redundant and hangs in the form of an apron of skin from the base of the glans. Erection is sometimes possible.

#### TREATMENT

When not accompanied by complicating abnormalities, inconsistent with the prolongation of life, the treatment is always surgical.

The indications for operation, according to Barney<sup>6</sup> are:

1. To relieve urinary incontinence.
2. To change the point of exit and the direction of the urinary stream and of the semen.
3. To change the direction and length of the penis.
4. To restore the penis to a more normal appearance.

Keyes<sup>7</sup> states that "Epispadias complicated by incontinence of urine is not amenable to plastic treatment." In the light of more recent developments, this is certainly not so, Young<sup>8</sup> having devised an operation directed at the cure of the incontinence. By excising the redundant roof of the urethra posteriorly and restoring the vesical neck and external sphincter by sutures he successfully controls the constant dribble. For many years Marion<sup>19</sup> has applied the same principle in the cure of incontinence, due to damage to the vesical neck. Other observers have noted that the incontinence is often greatly relieved simply by plastic closure of the defect, a result probably due to the tightening of the sphincter (Barney<sup>6</sup>). Reifferschied<sup>9</sup> reports an interesting instance in which he used a pedicled flap of the abdominal fascia with the fibres of the pyramidalis muscle slung around the urethra to

control the incontinence, and Melchior<sup>10</sup> had a patient who was well satisfied with a urethra which he kept closed with a forceps. Thompson<sup>11</sup> used a transplant of rectus fascia and muscle slung around the urethral neck to control the incontinence.

Finally, when it is obviously impossible to control the constant drip of urine by any other means, there always remains the possibility of deviation of the urinary stream by transplantation of the ureters into the pelvic colon, as successfully used by Stiles<sup>12</sup> in several cases. A plastic on the penis can then be done. A serious procedure of this magnitude is justifiable to control so distressing a condition as incontinence, which renders the victim unfit for all social relations. The constantly flowing urine excoriates the surrounding skin, covers it with encrusted urinary salts and the ever present odor of decomposing urine renders the person obnoxious to both himself and his associates.

To change the direction and length of the penis many writers advise making transverse incisions through the corpora cavernosa at the base of the penis. This is not always necessary, as the liberation of the structures beneath the pubic bone incident to the reformation of the urethra will often accomplish the same end. At all events, the operation should not be undertaken until the patient is at least six or eight years old, because the tissues are then more resistant and the parts have attained a greater size, making it easier to handle them. It is generally experienced that the margins of the sutured mucosa and the skin often fail to unite in spite of the greatest care and attention, leaving one or more fistulae which need to be closed by subsequent suture. If the incontinence is not relieved, a good cosmetic result will be but poorly appreciated by the patient.

Many methods of operation have been devised for the closure of the urethra and reconstruction of the penis. That of Thiersch<sup>13</sup> is classical and depends on the turning of flaps from the adjacent areas, and has proved of great value in some instances. However, the operation originally described by Cantwell<sup>14</sup> is much more satisfactory and logical, having only one disadvantage in that the separation of the urethra as a pedunculated flap, with its base above, tends to jeopardize its blood supply. The modification of the Cantwell technic, as practiced by Young, largely obviates this danger by leaving the urethral flap attached along its base and all of one side so that its vitality is assured. Keyes<sup>7</sup> describes this

operation in Keen's System of Surgery in a beautifully illustrated article which has, however, a fault in that the drawings show the margins of the urethral flap and the skin held by several forceps. The difficulty in obtaining union without fistula is great, and every precaution should be taken not to traumatize the margins to be sutured, in even the slightest manner. It is general knowledge that the area of a few cells crushed by the bite of the finest forceps may prove to be the starting point from which an invaluable flap melts away. Bunnell<sup>15</sup> comments upon this rough procedure and in all reconstructive surgery insists upon a technic without insult to the tissues as one of the requisites of success.

The steps of Young's modification of Cantwell's technic are:

1. Deviation of the urinary stream by perineal urethrotomy.
2. The penis is drawn out and fixed by a traction



Fig. 3. Shows repaired and lengthened penis with urethral orifice in normal position (after operation).

suture passed through the two sides of the bifid glans.

3. An incision is made around one side and the base of the urethral groove so as to mobilize it for subsequent suture but in such manner that its blood supply is not endangered.

4. The two corpora cavernosa, which are more loosely held together than in the normal organ, are separated by carrying the incision on one side of the urethral groove under the layer of mucous membrane and above the corpus cavernosum to the midline, from whence it is continued down between the corpora through the septum to the skin on the under surface of the penis. This must be done carefully so as not to open the cavernous body which

bleeds freely. In case it is opened, the wound should be carefully closed by a fine suture or ligature, as one of the essentials to success is the complete control of bleeding and avoidance of hematomata.

5. The urethral groove is then made into a tube by closing it over a catheter, by a continuous suture of fine chromic catgut.

6. The corpus cavernosum, to which the urethra has been left attached, is then rotated so as to place the newly formed urethral tube in its normal place beneath the corpora, which are then sutured together over the urethra with fine chromic catgut. Then the skin is closed over them.

7. The urethral catheter is withdrawn. This is important as if it is left in for some time, its withdrawal may cause slight bleeding which results in efforts at expulsion and a clot may be forced through the suture line.

The after care is simple, consisting only in care of the perineal wound and scrupulous attention to the cleanliness of the suture line. When union is secure, the perineal drain is discontinued.

#### REPORT OF CASE

L. B. Age, 8 years. Parents desired operation to cure the complete incontinence and correct the deformity of the penis.

The child is a healthy, robust, little boy, presenting no abnormality other than the malformation of his penis. He is an only child. The penis is broad and short and curved upward against the pubes. A redundant prepuce hangs from the lower surface at the coronary sulcus. The urethra is represented by a channel of mucous membrane which grooves the dorsum of the shaft from the apex to the pubes, where it disappears beneath the crescentic fold of skin into the vesical opening which easily admits the index finger, and is completely relaxed.

Cystoscopic examination does not reveal any abnormality in the bladder which has a capacity of six ounces. The testicles are normal in size and fully descended into the scrotum. There is no hernia and the pubic arch is intact. Incontinence is complete, the urine dripping constantly since birth, excoriating the skin and rendering the child miserable.

Operation May 5, 1924. Young's modification of Cantwell's operation was carried out. In attempting to control the incontinence the vesical sphincter was approached from above after the urethral tube and vesical neck had been exposed through the upper end of the incision around the epispadic urethra. It was freely liberated and after the redundant roof had been excised, a suture of linen was so placed that the urethral neck was tightened. This suture was then buried by the closure of the skin at the completion of the plastic. The postoperative course was uneventful, but, in spite of all precaution, a small fistula formed at the junction of the glans with the shaft. This was closed by a second plastic six weeks later and the prepuce was drawn over the shaft and used in the closure. Fig. 3 shows the final result four months after operation. The patient is now able to sleep through the entire night without voiding and goes four or five hours during the day, before it is necessary to empty the bladder.

#### EMBRYOLOGY

During the third week of fetal development the hind gut terminates in a dilated sac or cavity which is called the cloaca. This cavity is closed on its ventral aspect by a membrane which is derived from the persistent part of the primitive streak and which forms a partition between the cloaca and the shallow depressed area on the surface, termed the urogenital fossa. A little later this membrane extends from the umbilicus to the coccygeal tubercle, on the ventral aspect of the caudal portion of the body. Later the cloacal chamber is divided by a septum into a ventral passage, which becomes the urogenital sinus and a dorsal passage which becomes the rectum. The Wolffian ducts open into the ventral passage or the urogenital sinus. The openings are at first common to the ducts and the ureters, but soon the lower ends of the Wolffian ducts are drawn into the walls of the sinus, altering the relations so that the ureters come to open into the bladder dilation proper and the Wolffian ducts into the sinus proper. The sinus ultimately forms the prostatic and membranous portions of the urethra in the male and the whole urethra and vestibule of the vagina in the female.

The external genitalia make their appearance as paired swellings which unite to form the single cloacal tubercle about in the mid portion of the cloacal membrane, of which it is an outpouching due to an increase in the amount of investing mesoderm (Bryce<sup>16</sup>). The cavity of the cloacal tubercle is a continuation of the urogenital sinus and is known as the pars phallica of the sinus.

Von Geldern<sup>17</sup> thus describes the further formation of the external genitalia. The cloacal tubercle undergoes differentiation into two parts: a disc-like structure, the phallus, which comprises the summit, the entire anal and part of the lateral slopes of the tubercle, and the genital tubercle which is derived from the umbilical and lateral slopes of the cloacal tubercle. The phallus enlarges and elongates and becomes compressed laterally, its apical portion becoming the glans penis; the compressed walls by fusion form the solid urethral plate. Along the anal slope of the phallus a median slit appears, due to resorption. It extends into the cavity of the phallus and so forms a communication with the outside which is known as the ostium urogenitale. This slit-like opening extends along the entire length of the anal side of the phallus to the point which differentiates the glans from the rest of the

phallus and which ultimately becomes the coronary sulcus. Beyond the sulcus is a groove which has the urethral plate as a floor. From this time on, this portion of the organ undergoes little further development except growth in size. As the rest of the shaft is pushed out from the basal tissues, this part is simply carried ahead, and the ostium urogenitale extends along the entire length of the shaft on the anal side. A series of changes occur in the genital tubercle, forming the lateral genital swellings, which paired structures finally form the scrotum. The wide groove which extends distally from the point which is to become the coronary sulcus, and which has the urethral plate as its floor, becomes a tube as the edges of the plate grow mesiad, and terminates distally in an opening at the apex, its other end emptying into the groove of the shaft. The ostium urogenitale closes from the anal edge upward, the endothelial lining of the pars phallica closing separately, and the edges of the skin fusing up to the summit of the glans. The corpora cavernosa appear as a condensation of the mesenchyme and are united at the distal extremity and along the anal surface.

For some reason, not at present known in the case of epispadias, the ostium urogenitale is formed on the umbilical side or above the cloacal tubercle instead of below it on the caudal side as is normal. The abnormally placed ostium then opens into the cloaca or the structures which come from it and the pars phallica urogenitale does not develop. As the phallus elongates, it carries with it, on its umbilical surface, the ostium which forms a broad, shallow groove, and which rests above the corpora cavernosa. In no other way can the position of the groove above the corpora cavernosa be explained than by the formation of the ostium on the umbilical rather than on the caudal side of the phallus. The open groove on the dorsum of the penis then represents the misplaced and open pars phallica of the urogenital sinus, the degree of cleft depending upon the degree to which the exciting cause operated.

As to the reason why exstrophy of the bladder and epispadias should occur, many theories have been advanced. Von Geldern<sup>17</sup> places them into three classes:

1. The mechanical.

a. Rupture theory. This considers the malformation as due to a rupture caused by the retention of fluids in the bladder by a constriction which may occur at various points of the urethra.

b. The mechanical theory which considers a short or absent umbilical cord as the factor.

2. Pathologic theory, which contends that there is an ulceration of the anterior abdominal wall involving the symphysis pubis and bladder.

3. The theory of arrested development which holds that for some unknown reason the development of the embryo is arrested for a variable period of time, and that when development recommences, certain primitive embryonal structures are maintained and developed as such; and those which should have undergone differentiation, had no arrest occurred, fail to make these changes.

The immediate cause of this arrest of development is thought to be a chemical substance in the uterine mucosa which might cause only a slight arrest of development in some embryos and a marked arrest in others. This difference in effect may be accounted for by a difference in the strength of the substance or in the resistance of the embryo. In the longer arrests the degree of involvement is greater, while the brief arrests cause only the minor deformities (Von Geldern<sup>17</sup>).

Speculation as to the immediate cause or causes of development and the occasional results of its arrest is full of enchantment for the philosophic mind and will lead finally to the explanation of the most bizarre deviations from the usual. Charles Mayo<sup>18</sup> states it is a fact that errors of development occur in the cleavage lines of advance from lower to higher forms of life, and in the particular malformation under consideration suggests that the immediate cause is largely a mechanical one. It would seem that until we have an adequate knowledge of the force which initiates and limits growth, the explanation of the anomalies due to its occasional faults must remain shrouded in obscurity.

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## DISEASES OF THE PROSTATE AND THEIR TREATMENT, MEDICAL AND SURGICAL\*

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### INTRODUCTION

Diseases of the prostate should be of interest to all men since, if estimates made from hospital and clinic records are to be relied upon, practically all males have, have had or are going to have a chronic prostatitis, and thirty per cent of all men over fifty-five years of age have a prostatic obstruction, though only fifty per cent give symptoms.

The study of the infectious diseases of the prostate is relatively recent. Longnean, in 1815, described chronic inflammation of the prostate as a complication of gonorrhoea, but other prostatic lesions received little attention until Lallemand, in 1836, called attention to a category of maladies which had been previously attributed to mental and nervous diseases, and showed their association with lesions of the prostate and seminal vesicles. After the appearance of Head's work on the segmental distribution of painful stimuli, many previously unexplained pains were attributed to prostatitis, since the prostate receives fibers from the tenth dorsal to the third sacral segments inclusively.

As the medical profession came to realize the necessity of eradicating foci of infections before systemic diseases could be handled, the prostate and seminal vesicles became as well known as the teeth and the tonsils. About a year ago Dr. Charles Miner Cooper called attention through the *Journal of the American Medical Association* to the necessity of not accepting a negative finding as to the presence of pus unless the examining surgeon has been endowed by nature with a long finger, since "the physical limitations of even well trained urologists prevent them from recognizing a vesicular infection."

### ANATOMY

The prostate is a musculoglandular organ, shaped like a horse chestnut and surrounding the posterior urethra at the vesical orifice. It is generally described as being  $1\frac{3}{4}$  inches wide,  $1\frac{1}{2}$  inches long and 1 inch thick. The bladder sphincters are an integral part of it, the voluntary or external sphincter forming the apex of the prostate, while the so-called internal sphincter, made up of loops from

the longitudinal and circular layers of the bladder wall, is incorporated in the base of the organ.

The fascial planes surrounding the prostate are important in controlling the position of the structure, and in directing the spread of suppuration in this region. Denonvillier's fascia, which covers the posterior surface of the prostate and separates it from the rectum, is of great importance, since it forms an impenetrable barrier to the spread of diseases from the prostate to the rectum. However, its prominence in surgery is due to it being the first unmistakable landmark the perineal prostatectomist reaches as he approaches his objective.

### PHYSIOLOGY

From the standpoint of function the prostate is of interest as a muscular apparatus, secretory organ and a delicate nerve center. The intimate and integral association with the vesical sphincters causes it to play a most important part in the process of micturition. Sexually, it is just as important, since its rhythmic contractions at the culmination of coitus are primarily responsible for the phenomenon of ejaculation.

It has an external (sexual) and an internal (alterative) secretion. The former is expelled at ejaculation, mixing with the viscid seminal vesicle fluid upon which it has a solvent action. It undoubtedly stimulates motion in the spermatozoa. A study of the internal secretions was made by Macht a few years ago, and it was my privilege to watch some of his tadpole feeding experiments. Those fed with prostate had a rapid and marvelous development. With the recent vogue for ductless gland therapy the proprietary houses have put on the market many bizarre pluriglandular mixtures, containing prostate, ovary, etc.

The nerves to this organ are the hypogastriacs and nervi erigentes and their exact function is not known and neither is that of the numerous large ganglia present. It is assumed naturally that they play an important part in the sensory side of coitus. We are particularly interested because of the large number of sexual neurasthenics and the unsatisfactory and too often unscientific treatments to which they are subjected.

### PROSTATIC CALCULI

The calculi found in the prostate either arise (1) in the kidneys, bladder or seminal vesicles and lodge in the prostatic urethra, or (2) they are formed in the substance of the prostate. The true prostatic calculi, as distinguished from the urinary, have their

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origin in the corpora amylacea; these because of their increase in size act as foreign bodies, and in consequence of the general law of mucous membranes, which when sufficiently irritated throw out a deposit of calcium phosphate and carbonate, ultimately form calculi. As a rule they cause no symptoms and their presence is only discovered at operation or by a pelvic x-ray. Of course, if they lie against Denonvilliers' fascia, they will be discovered on palpating the prostate, and if they impinge upon the urethra, ejaculatory ducts, etc., they will cause symptoms.

#### ACUTE PROSTATITIS

Acute prostatitis is practically always immediately preceded by a posterior gonorrhoeal urethritis. The mild cases resolve or become chronic, but the severe ones are sources of worry to the doctor, as each is a potential prostatotomy, auto- or surgical. The patient is sick and complains of a tender mass in the perineum. On palpation the prostate is large and feverish. Hot sitz baths and hot rectal irrigations may bring relief at once, but if urinary retention requiring catheterization occurs and fever persists, it is best to do surgical drainage through a perineal incision rather than have a spontaneous rupture into the urethra, perineum or even into the rectum.

#### CHRONIC PROSTATITIS

The figures given by various authors as regards the frequency of chronic prostatitis are simply astounding, ninety per cent of all patients examined clinically or at postmortem being infected.

The commonest etiologic factor is gonorrhoea, and years may elapse between the infection and its manifestation as a chronic prostatitis. Rarely a case is immediately preceded by an acute prostatitis. In rare instances we find chronic prostatitis as a complication of septicemia, an infectious disease, or even following trauma. Abnormal sexual practices play a very important role. My observation is that the patients who give no history of a gonorrhoeal infection but admit excessive masturbation in youth, or an overindulgence in "petting parties," i.e., prolonged ungratified sexual excitement, are the most difficult to cure.

The diagnosis of chronic prostatitis, being based upon palpatory findings and a microscopic examination of the secretion, is generally easy to make. However, sometimes pus does not make its appearance until the second to fifth massage, and often there will be normal secretion and pus on alternate

days. The leucocytes of chronic prostatitis are very much smaller than those of acute gonorrhoea and the protoplasm is peculiarly granular. Granule cells are easily confused with pus cells by the inexperienced. The amount of pus is in direct ratio to the amount of involvement. During the time of the treatment the amount of pus increases, probably because of the trauma, and a few weeks after cessation there is a marked decrease.

The organism present may be the gonococcus, but generally it is a secondary invader, the colon bacillus being the most common. The frequency and longevity of the gonococcus in the secretion of chronic prostatitis cases is a debatable one, authors differing widely in opinion. I personally know of a case where there had been a simple uncomplicated gonorrhoea that had promptly responded to treatment. Six years later the man consulted two doctors as to his moral right to marry. The prostatic secretion contained twelve pus cells in a high power field. One doctor advised against marriage, but the patient followed the advice of the other and the bride developed an acute bilateral gonorrhoeal salpingitis while on her wedding trip.

The symptoms of chronic prostatitis are commonly divided into the three well known groups—urinary, sexual, and referred, whereas the most important group, the secondary infections, are generally ignored. However, with the revived interest the internists are taking in focal infections in an attempt to find the causes of hopeless diseases, the prostate and seminal vesicles have again come into medical prominence. Everyone knows that progressive arthritis should not be considered an incurable ailment until it is definitely demonstrated that there are no active foci of infections in the body, but unfortunately many doctors do not know that the same is true of pericarditis, angina pectoris, etc., and that the teeth and tonsils play a minor part as compared with the prostate and seminal vesicles as foci of infections.

The laity knew little about prostatitis until about five years ago; then they received an education from the headlines of the daily newspapers, when one of the Nation's beloved officials fell a victim to the ailment, and the word "prostate" was added to most "parlor vocabularies." Unfortunately there is no specific treatment; vaccines are of no value and surgery is not indicated except in rare cases. The most satisfactory treatment consists of massage, irrigations, instillations and instrumentation. If asked to specify, I would state that the two most

important agents for the cure of prostatitis consisted of a long index finger and plenty of mercurochrome.

#### TUBERCULOSIS OF THE PROSTATE

The cure of tuberculosis of the genital tract is impossible with drugs and the mortality is very high with operation. Authorities differ as to the origin of infection, one school holding that it is in the epididymis and can be cured by a conservative epididymectomy, while the other maintains that it lies in the seminal vesicles and can only be cured by a radical removal of the genital tract. In either case tuberculosis of the prostate is rarely primary, and its operative treatment is wholly incidental.

#### MEDIAN BAR

The median bar is an obstruction, due to formation of fibrous tissue involving the posterior vesical lip, unassociated with changes of an obstructive character elsewhere in the prostate, bladder or posterior urethra. In many cases it is secondary to an old seminal vesiculitis. The general symptoms are the same as of hypertrophy of the prostate, hence in men under 55 years of age suffering from obstruction, we look for a median bar, while above that age hypertrophy is suspected. A very small bar will cause as much trouble as a large hypertrophy.

The treatment is to destroy the dam or bar by means of an intraurethral punch. This operation is simple but radical and curative, and the danger lies in the possibility of an uncontrollable hemorrhage. I have transfused punch cases but I have never seen a case that *required* suprapubic packing, although such is often done.

#### BENIGN PROSTATIC HYPERTROPHY

Little is known as to the etiology of prostatic hypertrophy, but it is regarded as largely a disease of married men. No case has ever been reported as occurring in a Catholic priest, whereas it is very common in Protestant clergymen. The symptoms are almost pathognomonic. When a man past 50 years of age complains of a gradual increasing urinary difficulty, eventually resulting in retention, and as a consequence has drowsiness, headaches, gastrointestinal disturbances and finally nocturnal thirst, a cystoscope is not necessary to make the diagnosis. The course of development of the obstructive urinary symptoms is (1) frequency, (2) hesitancy, (3) urgency, (4) diminution in size and force of stream, (5) incomplete urination, the residual varying from 5 c.c. to complete retention and (6) sudden stoppage.

The usual routine is to take a careful history and then ascertain the size and shape of the prostate by palpation and cystoscopy. Recently some urologists have advocated substituting the x-ray for the cystoscope in cases of the debilitated and feeble, a combination of air cystograms and rectograms giving the exact outlines of the prostate. There is only one specific treatment for benign hypertrophy of the prostate and that is surgical removal of the tumor. Medicines, x-rays, violet rays, etc., are worse than useless. Since the mortality rate has been reduced to less than that of tonsillectomies, no reputable physician any longer condemns his patients to that slow and certain death in vogue a decade ago, a catheter life. All bladders become infected after repeated catheterizations, no matter how perfect the technic. This is well illustrated by the fact that for years Dr. Hugh H. Young at Johns Hopkins Hospital has annually offered a ter-rapin dinner to anyone who could bring a case requiring frequent catheterization to operation with an uninfected urine, and to date it has never been won.

The type of operation is of secondary importance. For the general practitioner who does all his own surgery the suprapubic prostatectomy is the operation of choice. The perineal approach, although commonly regarded as giving better functional results and having a much lower mortality rate, is very technical, and should not be performed by one who has not been thoroughly trained in its details.

However, of far greater importance than the mere technical cutting is the preparation and post-operative care of the patient. Kidneys that have accustomed themselves to functioning against a back pressure must be reeducated. If the residual is suddenly and permanently removed by operation, the patients are prone to die of uremia. On the other hand, a retention catheter and a fluid intake of 5000 c.c. per day will very shortly transform an inoperable case into an excellent risk.

#### CANCER

Marked induration, if only an intralobar nodule in a prostate of a man past 50 years of age, should be viewed with suspicion, especially if the cystoscope shows little intravesical prostatic outgrowth, and pain and tenderness are present. "When severe pain and hematuria are associated with a very hard prostate with upward prolongation of the induration into the region of the seminal vesicles on each side, the nature of the disease is evident at once."

The etiology is as obscure as that of cancer in general. It may occur coincidentally with benign hypertrophy. It is not rare, but few realize that one in five of all enlarged prostates are cancerous. Early diagnosis is necessary to effect a cure. If the cancer occurs as nodules in the lobes, a cure will follow a conservative prostatectomy. Carcinoma occurs primarily in the posterior lobe and never breaks through the dense Denonvilliers' fascia but spreads upward between the seminal vesicles. In the cases where the infiltration has not extended more than a short distance beneath the trigon, Young's radical operation will effect a cure. In the more advanced cases a combination of radium and surgery must be used.

#### SARCOMA

This disease is very rare and the diagnosis is generally corroborated at autopsy. The tumors are large and soft and there is greater danger of confusing them with abscesses than with carcinoma or benign prostatic hypertrophy. Since the introduction of radium the prognosis should be much better, because of the susceptibility of sarcoma to this element.

#### CONCLUSION

All males who have never reveled in "petting parties," been guilty of excessive masturbation, or suffered from gonorrhoea will probably avoid the discomforts and dangers of chronic prostatitis. This ailment can be cured, but the treatment is tedious and slow, taking years rather than months. If untreated, an active focus of infection is left in the body which later may manifest itself in the form of arthritis, angina pectoris, pericarditis, etc. Benign prostatic hypertrophy can be cured with surgery, while malignancy can be cured by surgery or a combination of surgery and radium.

All diseases of the prostate are curable if they are diagnosed promptly. In this age, with the many urologic checks and counterchecks at our command, there is no excuse for medicinally treating a surgical prostate until the patient is beyond the curative stage.

1275 Flood Building.



## THORACIC TUBERCULOUS ADENITIS

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During the last twenty years I have become deeply interested and concerned in the silent area lying under the sternum, where the hilum and deep bronchial glands are situated.

In private practice and in the free dispensary numbers of children have been noticed who have a lack of proper growth and nutrition, and most often have a pronounced cold habit. These children usually rapidly improve under well directed treatment.

I cannot but believe that by overlooking the adenitis and lack of proper endocrine functions in children, even though it be not of tuberculous origin, we are missing an opportunity to restore to normal the functions of these hidden glands, which are so necessary as a safeguard against tuberculosis and kindred diseases in adult life.

During the World War, in examining four thousand soldiers and recruits, at Vancouver Barracks, Wash., we saw many with chronic thoracic adenitis, whom we were directed to pass for service, unless there was evidence of clinical activity present. Subsequent to this, from June, 1919, to July, 1923, we treated several hundred of the returned soldiers at Pierce Sanatorium, who were suffering from an activated pulmonary tuberculosis, the result of changed environment, camp life and rigors of war.

Is it not only possible, but altogether probable, that there is a distinct relation between the underdeveloped youngster with a marked cold habit; the young man with a narrow and poorly developed chest who was admitted to service in the army; and the returned soldier who at the first crisis after entering the service was prostrated with tuberculosis?

#### FREQUENCY OF BRONCHIAL TUBERCULOSIS

In support of my conviction that a great number of our young people are suffering from the effects of tracheobronchial or thoracic adenitis, with their resistance against disease so impaired that the first crisis in their lives is liable to precipitate an implantation of the tubercle bacillus, I desire to quote from the following observers:

Harbitz found in 275 autopsies in children that 43 per cent of these were positive for tuberculosis and in a very considerable proportion of these posi-

\* Read before Portland City and County Medical Society, Portland, Ore., March 5, 1924.

tive cases the glands of the hilum were often the seat of primary infection.

Geill found the lymph nodes involved 263 times in 902 autopsies, and of these, in 109 instances only were the bronchial nodes not involved.

Boltz, in 101 fatal cases of pulmonary tuberculosis in children, reports that in only 3 were the bronchial nodes not involved.

Quoting from the above observers, the results of 1288 autopsies of children, 37 per cent were found to have had the lymph nodes involved with a tuberculous infection (Sajous, Vol. II, p. 237).

Enlargement of the bronchial glands occurs much more frequently in children than in adults, and predisposes to the invasion of the tubercle bacillus, although the primary infection may be due to la grippe, whooping-cough, measles or syphilis.

Martigo (*Brazil Medico*, 1920) reports two instances in infants with symptoms from mediastinal glands, including dyspnea and suggesting asthma. Laryngeal spasms also occurred, but cough was the most constant symptom, a dry spasmodic cough resembling that of whooping-cough.

F. W. Leathart (*Brit. Med. Jour.* Feb. 14, 1920) considers adenitis highly infectious, as shown by the facts that it is far more frequent among children attending school than among those who do not attend school; that when one child is attacked, the disease subsequently spreads to others who were previously healthy. There is a tendency to chronicity, the child in such cases being a "carrier" and consequently a source of danger to other children.

In order to refresh our memory regarding the lymphatic system, I desire to quote the following: "The system is composed of a series of units, consisting of lymphatic spaces, fine lymphatic vessels interlacing in all directions, and lymphatic trunks which center in the periphery of each organ. The union of the various divisions of this system unite to form the thoracic duct. Scattered along the main branches are the larger and more important glands or nodes which filter the products swept along the lymphatic stream. The main or primary set of nodes are situated in close relationship to the great divisions of the body. Pathologically the most important of these groups are the cervical, thoracic and mesenteric."

According to Quain, the cervical glands may be divided into two groups, superficial and deep. Those more superficial lie along the external jugular vein and drain into the uppermost of the deep cervical glands. These glands are numerous and are con-

tinuous with the superior mediastinum and drain into the right thoracic duct.

The lymphatic glands of the thorax consist of the substernal, the bronchial, and the posterior mediastinal glands and their subdivisions. The lymphatics of the lungs consist of a fine network of lymphatics, which converge at the root of the lung and terminate in the bronchial glands.

#### PHYSIOLOGY

The function of the lymph glands, to act as filters for the lymph and to protect the blood stream against any harmful bacteria by seizing upon the invading organisms and locking them up in the gland substance, brings them often in contact with violent pathogenic bacteria. In thus defending the body the glands are often subjected to marked swelling and engorgement during the acute inflammatory attacks, and are most often capable of withstanding these acute attacks. When the crisis is passed, to all intents and purposes they usually return again to a relatively normal size and function.

There comes a time when, after violent and prolonged septic invasion, the resistance of the glands is overcome and as a result of the morbid process suppuration and necrosis of the lymphoid element is the result. At such a time the body defense is destroyed and the bacillus of tuberculosis finds a willing host. It is to this phase of adenitis that I wish to draw your attention.

#### DISEASE RELATIONSHIP

Lymph glands are most always found on the protected surface of the body. They become involved in disease processes only secondarily, except in rare instances of traumatism. Most commonly the glands become infected through the lymph stream from some focus of infection in the lymphatic field, draining through the particular gland groups. Thus the tonsils, bronchial glands, the gastrointestinal and adenoid tissues are most frequently attacked.

In this connection Harbitz says that, because of the predilection of the tubercle bacillus for the lymphoid tissue in children, when only a limited number of the organisms is discharged into the circulation, infection of other tissue may not take place or may be only very temporary.

Grawtz, Aufrecht, Berkman, and others have called attention to the importance of the descent of tuberculosis from the cervical lymph nodes through the lymphatics to the bronchial nodes and thence to the lungs.

Racjford believes that in tuberculosis the lymph

node is by far the most important common form of initial infection in infancy and childhood, and that from this focus the disease spreads to other organs.

Tenderloo believes that direct lymphatic extension of the tubercle is the most important avenue.

Harbitz states that direct extension of the disease from one group of glands to another unquestionably occurs, and that it is probable that the blood stream has been the carrier of the infection. The direct drainage of the lymphatic ring in the nasopharynx into the deep cervical nodes of the neck is the avenue by which these glands are most commonly infected. Especially in children, where the tubercle bacillus has been inhaled, it may pass through the bronchial mucous membrane and be localized first in the thoracic glands.

Pathologic examination has repeatedly shown that infection in the tonsil often lies deep down toward the capsule with but little tonsillar involvement.

McCauley has written me from Vienna (Jan. 24, 1924) as follows: "Your question of thoracic tuberculous adenitis was discussed by me with Lugar, Neumann and Bauer and in their opinion tuberculosis germs coming to the lungs are carried to the adjacent lymphatic glands through the lymph stream. This passage may be primary or secondary to the formation of a primary focus. The future depends on the number and type of the germs and the immunity and the resistance of the patient.

"As to the site of primary infection in the lungs, Ghon's theory is generally accepted here. This is demonstrated postmortem in many cases. Recently Bauer demonstrated six lungs of children under five years of age and the focus was found in the right lower lobe close to the pleura in four cases. Erdheim in a course of child pathology given recently demonstrated Ghon's theory in approximately 80 per cent of the cases.

"It is interesting to note the tracheobronchial, etc., glands and their involvement. Almost every case



1a. Marked hilus infiltration and peribronchial shading sharply outlined. Nodules of glandular infiltration in girl of 18 years.  
1b. Oblique plate showing clouding of entire posterior mediastinum.



2a. Anteroposterior plate, showing characteristic clouding in hilum and enlarged bronchi (annular ring right upper quadrant) in girl of 11 years.  
2b. Oblique plate showing heavy shading of glands in posterior mediastinum.

presents these glands which are virtually solid coal and in size from a hazelnut to a tangerine orange; this is called Vienna disease. There must be a close connection between such glands and the great number of active tuberculous cases seen here."

#### DIAGNOSIS

In the diagnosis of tuberculous adenitis of the tracheobronchial lymph glands, Belot well summarizes the diagnostic points as follows: (a) Clinical history and symptoms, (b) x-ray examination, (c) tuberculin test, after which he adds the more doubtful complement-fixation test.

The omission of physical signs is significant of their uncertainty, but in experienced hands they are of real value, and with further information afforded by x-ray, both anteroposterior and oblique, will prove more so as time goes on. Philip, of Edin-

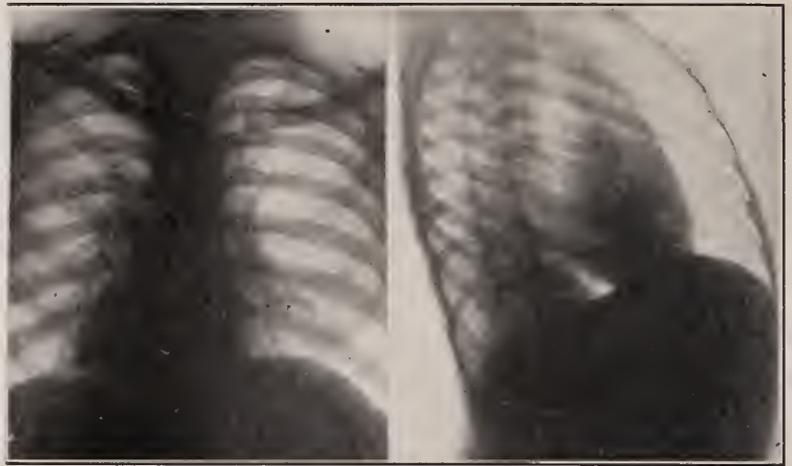
burgh, emphasizes the importance of a thorough examination of the more important groups of glands in cases in which any glandular enlargements are found, or in children whose general condition is below par.

Enlargement of the superficial veins of the thorax, the irregularity of the pupils, an increase in the area of dullness on either side of the sternum, D'Espines sign (prolongation of the whispered voice below the first dorsal vertebra), one or more of these signs supported by the fluoroscope and x-ray are generally considered to be positive evidence of tracheobronchial adenitis.

Quoting from *Jour. A.M.A.*, April 9, 1921, "In 449 children under 16 years of age, a positive D'Espine sign proved indicative of enlarged glands at the root of the lungs." Enlarged bronchial glands could be due to any one of several causes, the chief of which is an infection by the tubercle bacillus. When due to tonsillitis, whooping-cough or measles, the enlarged tracheobronchial glands were not of sufficient size or density to give a positive D'Espine sign. A positive D'Espine sign found in a poorly nourished child is usually due to tuberculous infection of the hilum.

The von Pirquet tuberculin test should always be employed in all suspicious cases, and if found negative, a Wassermann should be employed, chronic mediastinitis being most often due to tuberculosis or syphilis. Syphilis may be excluded as a cause of hilum involvement with a negative Wassermann and no other specific signs.

Lymphosarcoma, or other malignant growths of lymphoid tissue, is almost always associated with other glandular enlargements throughout the body. Cold abscess penetrating the posterior mediastinum, secondary to Pott's disease, is attended with symptoms of bone disease and stereoscopic x-ray shadows



3a. Characteristic anteroposterior plate showing heavy hili, fine stippling along first and second divisions of bronchi, in girl of 12 years.

3b. Oblique plate showing fine uniform shading in posterior mediastinum.



4a. Exceedingly heavy hili and peribronchial markings. Anteroposterior plate, boy of 13 years.

4b. Oblique plate showing clouding localized largely in upper and mesial posterior mediastinum.

clear up the question. Mediastinal abscess, due to ulceration of the stomach or esophagus, is always attended with symptoms referable to these organs. Glandular enlargements due to acute infectious disease will be cleared up by the element of time, in observing the course of the disease. The differentiation between tuberculous adenitis of the tracheobronchial and hilum glands and simple adenitis of these glands is often extremely difficult.

In my personal experience, I have found these border line cases of very great interest. The most thorough and painstaking efforts must be made. History, von Pirquet, D'Espine's test, temperature records, hemoglobin estimation, weight, nutrition, and hygienic measures should be employed.

After screening the chest with the fluoroscope and taking an anteroposterior film, the results with

an oblique film are often most satisfactory and illuminating. It is not uncommon that small calcified spots are found along the distribution of the bronchi. These spots are believed by Neumann to be the points of initial implantation of the tubercle bacillus, although most often found to be under arrest by calcification. Also it is quite common to notice in children bronchiectasis or bronchogenetic fibrosis or contraction in what appears to be a favored location in the right lower lobe.

Tracheal, bronchial and thoracic adenopathy are found frequently in children. Its occurrence lessens the resistance of the lymph nodes in their function to protect the system against invading bacteria. It can be diagnosed in many instances by history, symptoms and physical signs. In such cases a great aid to diagnosis is x-ray fluoroscopy, and of particular aid is the use of the oblique film.

#### SUMMARY

In acute tuberculous lymphadenitis the following subjective signs are commonly observed. Irregular elevation of temperature, lassitude, easy fatigue, frequent colds, nonproductive cough of a wheezing character and a marked expiratory stridor. The child shows evidence of malnutrition and appears frail and anemic.

Simple bronchial lymphadenitis whether acute, subacute or chronic is a distinct clinical entity in childhood. The first symptom noticed is a frequent cold habit which is followed by a hacking nonproductive cough. As the condition progresses, evidence of malnutrition and a lack of proper development are often observed. Enlarged tonsils and adenoids may be an exciting factor. Often, however, after these have been removed the child's condition of cough and frequent colds continues with consequent lack of proper nutrition and development.

I do not believe that we can afford to attempt to draw the line too closely between tuberculous and nontuberculous adenitis. In either case general hygienic, supportive and corrective treatment is urgently demanded.

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**Nasal Deformities Associated with Congenital Cleft of the Lip**—V. P. Blair, St. Louis (Journal A. M. A., Jan. 17, 1925), confines his remarks to cases of single cleft. The anatomic significance of the flare or spreading of the nostril is presented, and the reestablishment of the natural relation of the ala to the columella is described. Blair states that in infants and most young children, reconstruction of the nostril floor, with the repair of the lip, is all that is necessary. In a secondary correction, when the rotation of the long axis of the nostril opening is not very great, narrowing and bringing forward the floor of the nostril may be all that is needed.

## NEW IDEAS REGARDING EPILEPSY AND ITS CURE\*

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On account of the limited time for this paper I dare not go into the history of epilepsy, but will merely introduce the disease as one which has been known for centuries as "the sacred disease," because it was thought that the sufferer was having the disease inflicted upon him by the gods. Later in the fifteenth and sixteenth century, when witchcraft began to be prevalent, the victim was thought to be possessed of some strange demon and was often punished or shunned for his misfortune.

The minds of the medical profession have been occupied with the problem of the care of epilepsy from the time of Galen, chiefly perhaps because of the fact that many brilliant men of history were reputed to have suffered from it. It has been often stated that Julius Caesar, Napoleon Bonaparte and Henry Clay were among its sufferers.

As we pass through the ages of ignorance and superstition down to the modern era with its wonderful scientific progress and marvelous discoveries, medicine has kept pace, but in this one disease we still find that with all of our skill and science we have not been able to reduce the numbers of those afflicted, but rather would statistics show that the number is on the increase. This may be for two reasons. First, due to closer observation and better methods of investigation, we may have succeeded in locating more of these sufferers; second, it may be that our increase in population, together with the accurate statistics which we now have at our disposal, makes this seem true. Be this as it may, for the past century physicians have recognized and named this disease, having made many attempts at scientific treatment.

There is scarcely a sedative in the pharmacopea which at one time or another has not been tried in the hope of alleviating this disease. Sometime between forty and fifty years ago sodium bromide was introduced as having a most gratifying effect, then followed trials with many of the other bromides. Other than making the patient dull and causing mental injury, together with stomach disorders and skin eruptions, these drugs have had but little effect, the slight relief offered, which is at best only temporary, being offset by the harm done.

\* Read before the Forty-sixth Annual Meeting of Montana State Medical Association, Helena, Mont., July 9-10, 1924.

I can safely state without fear of contradiction that no bromide has ever produced a cure of this disease.

A few years ago a new sedative was discovered and brought to the attention of the profession as having wonderful, yes, an almost miraculous effect upon epilepsy. That drug is known as luminal. Other than the sedative effect in reducing nerve tension it has proven its failure to cure a single case. It has to its credit, however, the fact that it is less harmful than any of the other sedatives heretofore used and leaves a more lasting and pleasant effect. Like its predecessors, it cannot boast of producing permanent relief, for in an experiment of withdrawal on forty-five patients under my care, I began to notice that within a few days the attacks came with the same frequency, duration and intensity as before.

It is human nature to run after fads, hence when glandular therapy was introduced as a treatment for rejuvenation, some physicians began to use certain forms of these glandular extracts in treating this disease and were rewarded by having the seizures temporarily relieved. This form of treatment is still in vogue and at one time was expected to become a panacea for all the ails of human flesh. From a wide experience with these extracts I can truthfully state that so far they have brought nothing much but disappointment as far as a permanent relief for epilepsy is concerned.

About a year and a half ago, due to some painstaking animal experiments on dogs, it was discovered that the removal of the parathyroid produced a trembling known as tetany. These tetanic contractions in the animal so resembled epilepsy that it was concluded it was a disease due to the disfunction of these small glands. By continuous experimenting it was found that these same glands acted as filters for certain toxins which were present in the system and that without these filters the animal died. Next it was proven that if the animal with its parathyroids removed was fed on certain forms of lime salts, it survived. The outgrowth of this laboratory work, which was done at the University of Chicago by the two Dragstedt brothers, who by the way are natives of Montana, was that a new treatment was announced as a cure for epilepsy and calcium lactate was heralded as that cure. We have not been able to do enough work with this new drug to state definitely as to its efficacy, but from my theory of the cause of epilepsy I feel sure that it too will go into the discard as have all of its antecedents.

After having tried numerous other drugs and chemicals for this disease, with an evanescent success, and after a close application and study for a period of eight years as to the cause of this infirmity, I have been repaid for my efforts by learning that we of the medical profession are on the wrong trail. I have also come to believe that the so-called pathologic defects in the brain, the accompanying disturbances of the glands of internal secretion, and the cardiac and circulatory disturbances are the after effects and not the cause of these attacks.

What then is the cause? For more than a century we have all been asking this question and I believe we can give an answer which is partially if not completely correct at this time. A little history must be presented before I dare discuss this important finding. Dr. Sigmund Freud gave to the world the theory of repressions, complexes and wish fulfillments in dreams and psychoses. Next he advanced a new method for the treatment of these conditions, known as psychoanalysis, which literally means mind-analysis. Since Dr. Freud's monumental discovery, his theory, which to me is one of the greatest single contributions to medical science, has been actively used by our modern psychiatrists for the treatment of neurasthenia, hysteria and the milder psychoses. There are those who still take issue with Freud either through ignorance, resistance, malice or prudery. It would take, however, a full paragraph of this paper to mention the names connected with the psychoanalytic movement. But when such men as William A. White, Smith Ely Jelliffe, Drs. Putnam, Clark and Brill, in America; Ernest Jones of England; Ferenczi, Stekel, Wundt, Maeder, Von Hug Hellmuth and Poul Bjerre of continental Europe embraced the idea, no one can gainsay its value. These and many others are converted to the belief of Freud as to the basis of psychoneuroses.

Dr. Kempf, formerly of St. Elizabeth's Hospital, and an ardent student of Freud, not only advocates his methods, but has done original investigation in the study of emotions. After having thoroughly worked out the James-Lange theory of emotions, he has reached the conclusion that our physical distresses are the result of our psychic tensions accumulating in the autonomic nervous system and crying for release.

With this introduction we are now ready for the new idea as to the cause of epilepsy. It is a psychic tension or stress in the human body, the result of

mental conflict with the environment, to which the individual cannot make an adequate adjustment. The majority of mental conflicts are of a nature which are socially taboo, as Freud has shown in his three contributions to the sex theory. The body always seeks pleasure and in seeking, if denied, a stress or tension of some kind must result. It is the law of every living thing to try to live in its environment with the least resistance and the least amount of pain, so that it needs must neutralize its tensions by having an adequate outlet. The more experience I have in treating epilepsy, the more am I inclined to believe that it is an attempted resolution of a serious mental conflict, in which the battle is waged between the instincts or primitive emotions and the desire for social approval. All psychoneuroses are the result of such a battle, with the attempt of the individual to make a social adjustment.

My observations along this line have led me to believe that we are approaching a new era in psychiatry, where we will no longer name the condition, but will classify it as a substitution, transference, repression, regression, or a disorganization, according to the degree of conflict of the psyche. Then we will classify neuroses and psychoses as progressive stages of a single condition. Epilepsy in a new light will then be considered as a borderland condition between the two states, in which the mental conflict is so great as to temporarily arrest reason and cause the patient to withdraw from the world of reality in order to indulge in a dream or phantasy state, wherein he may gratify some primitive instinct. A realization of a feeling of guilt for thoughts or acts socially disapproved or criminal in nature seems to be the chief and basic cause of all attacks of adult epilepsy. In every case which I have treated psychologically I have found one or both such factors at work, and the longer this guilty feeling is held, the more severe and oftener the attacks.

For the benefit of those physiologically inclined, let us consider the body as an electrochemical machine. This is not a new theory, but was advanced by Dr. Crile of Cleveland as a theory of metabolic activity. If we consider this theory, we then can think that these tensions are the result of minute quantities of electricity accumulated at various spots in the body. When a low potential of electricity exists in one part of the body and a high potential in another, according to the law of electric conductivity, these seek to unite with each other to

become neutralized. If the accumulator, which is the brain, cannot neutralize or deneutralize with some other portion of the body, there is but one thing which can happen—that is, the overcharged condition of the brain produces an explosion of force and this is exactly what occurs, when the tension becomes too great for the organism's endurance. This explosion is the epileptic fit or seizure and the convulsive movements are the efforts of the organism with its activity of cells in the brain to lower this potential completely, so as to produce comfort from the tension or, in other words, neutrality. Every time this potential is disturbed sufficiently to cause increased brain pressure, the convulsive seizure recurs.

Connecting the use of this idea of electricity with that of mental tension, which operates in the same way, and has been proven by an English neurologist by the name of Sherrington, we have the whole idea in a nutshell. When our emotions begin to play with us and are of such nature as to have no outlet, for social or other reasons, these mental tensions are produced. The emotions help to stimulate all the glands to activity and through the action of the sympathetic nervous system these glands become overstimulated and discharge substances in the blood stream which produce these electrochemical actions and generate electric charges.

My contention is that in view of the facts set forth, epilepsy, excluding the types caused by trauma and those of organic disease, is a disease caused by psychic tensions stimulated by the emotions. These tensions trying to neutralize or relieve themselves and obtain comfort for the individual, thus produce periodic discharges, otherwise known as convulsions. Epilepsy is, then, a psychogenic disease and should be classified under the psychoneuroses. The next natural conclusion and the plea that I wish to make is that from this time on we should treat it by psychologic methods. The gist of my theory for the cause as well as the cure of epilepsy rests on the knowledge of the fact that it is of psychogenic origin.

Pursuing these lines and using psychoanalysis as an experiment, I began to work out numerous complexes which I proceeded to remove. These are the mental tensions, to which I have so often called your attention in this paper. By long study and constant application to these methods I have evolved a technic which I believe is original and has never been announced to the medical profession before, except at the time I read a description of this idea

before the Silver Bow Medical Society. I feel gratified to have another opportunity to give a slight resumé of a branch of medicine which has a wonderful future. Time would not permit me to describe the plan used, but suffice it to say that it varies from that of Freud, Stekel and Bjerre in that, the moment I reach a complex through dream analysis, I direct the patient's mental trend rather than allow him a free course of thought. This I believe meets with hearty disapproval from most psychotheraputists.

We are constantly learning by other's mistakes and so I believe that this plan has obtained for me such gratifying results that I feel safe in continuing along such lines, as I have in most cases gotten at the salient complexes in a much shorter time than is possible by the other methods. It is a constant source of pleasure to me to see the seizures diminish as if by magic and also grow less intense and distressing to the patient. It would not be just to you to leave you under the impression that all cases can be cured, for there are the hopeless mental defective types, those of limited intelligence, brain tumors which are not amenable to treatment, and such cases will only yield disappointment and failure if attempted. There are also a few who will not give the proper mental cooperation; these, too, are also hopeless.

Many epilepsies of childhood I am sure will in the future be treated by psychologic means, because recent investigators have shown that a child may develop a serious complex by fear or other emotions, which he will carry until removed by psychoanalysis. It is my belief that the majority of these infantile cases may even be cured by a more perfected technic and I am beginning to attack this problem at the present time, with what success remains to be seen.

My experience with these ideas assures me that I am on the right track and that I may hope to relieve countless sufferers of this dread disease, which always incapacitates, but seldom kills. Some animal investigators have proven recently that leopards have epilepsy and always die as the result of that disease, unless killed in combat or by other disease. This discovery but strengthens my theory of conflict as the cause of this condition, for is it not true that a leopard is the most emotional of all wild animals held in captivity? It is my request that you do not pass judgment on my ideas until you have

studied the psychologic principles involved and given them a fair trial.

We learn more often the true value of a treatment through a study of actual cases, so I will here present the history of two cases.

My first patient, when I saw her the first time, was having from seven to ten grand-mal seizures bimonthly. After a course of treatment of four months, twice weekly, she had less than an average of one attack a week and never went into complete unconsciousness. She never received any medicine of any nature except cascara occasionally. The most surprising result is in the change of character of this woman. Before I saw her she had the reputation of being almost a maniac before seizures, and all of the attendants were afraid of her. Now she cannot be forced into an argument and will leave a room rather than quarrel. She performs many light duties and on the whole is a model of industry and decorum.

The next case is a young married woman unhappily wed who was in a state of coma from status-epilepticus and on the first day had forty-two distinct seizures, remaining in stupor for the next five days. When she regained consciousness she told me that she was sent by her family to have me see if I could help her. I took the case with serious misgivings. She has now had two treatments a week for a little over two months and instead of having twelve to fifteen total seizures a day, she may have one at about the menstrual time and that is only momentary in duration. Her temperament has shown a marked change, in that she was dull and disinterested in life and seemed to have no mind. When I last saw her she was alert, could do beautiful crochet work, write a sensible letter and had an excellent memory. If her treatment is continued, she is destined for a cure.

All of you are familiar with the epileptic temperament and know that there is extreme quarrelsomeness and irritability in practically every case. After a few treatments the reverse of this condition is always noticed. The patient becomes quiet and docile; there is a constant desire on his part to control emotions and each vies with the other to try to prove his ability at self control.

The conclusion I now reach is that adult epilepsy is amenable to treatment by psychologic means and that, unless a patient is so treated, nothing of permanent benefit can be accomplished. Recent confirmatory evidence of my ideas has just been advanced in a new book by William Stekel of Vienna. It is safe to predict in closing this paper that we are on the verge of a new era in medicine, where the mental makeup of the patient will get as great or a larger consideration than the physical when we are making our final diagnosis, and it behooves all of us to devote some time to psychology, if we hope to hold our own in the march of progress and eradicate the cults which are sapping our organization.

## RENAL DIABETES

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The presence of a glycosuria has stimulated much theoretical speculation and scientific research in an effort to determine the etiologic factors which are responsible for its appearance.

Thomas Willis, in the 17th century, discovered that it was pathologic to find sugar in the urine. Dodson, in 1775, discovered that there was sugar appearing in the blood before it appeared in the urine. Following these two observations the trend of investigators carried them to the consideration of a certain point of permeability, where the kidney permits the passage of sugar into the urine.

In 1878 Claude Bernard demonstrated that an excess of sugar in the blood was the direct cause of glycosuria. It was assumed at this time that it was impossible to have a glycosuria without having a corresponding hyperglycemia. Eight years later, in 1886, Von Mering demonstrated that the administration of phlorizin in animals would cause a glycosuria without a corresponding hyperglycemia.

It then occurred to investigators that there might be a clinical condition analogous to what occurred in an animal which had been given phlorizin. Ten years later, in 1896, Klemperer reported the first case of such a nature, and gave the following postulates as characteristic of the condition:

1. That the glycosuria should be within wide limits independent of the amount of carbohydrate in the blood.
2. That the sugar in the blood should at least not be increased, but should rather be diminished.
3. That the development of nephritis decreases the glycosuria.

Lüthje, in 1901, brought the matter of blood sugar determinations into the diagnosis. Von Noordin again emphasized this point.

By 1914 the point of accuracy of diagnosis had become sharp enough so that there was controversy over whether or not cases with glycosuria were types of diabetes mellitus or renal diabetes. Galambos in this year differentiated between renal diabetes and mild diabetes mellitus as follows: "When a chronic glycosuria is present with but a questionable or no hyperglycemia we have to deal with either a diabetes mellitus with an increased kidney permeability or with renal diabetes. When the blood sugar is slightly increased the case is one of diabetes

mellitus with increased renal permeability. When, however, the blood sugar is subnormal or normal, or when alimentary hyperglycemia is absent, the case is one of renal diabetes: Glycosuria largely independent of the diet speaks for renal diabetes."

Lewis and Mosenthal<sup>1</sup> reviewed all of the cases of renal diabetes presented up to 1919, at which time Bailey<sup>2</sup> again reviewed the subject and added his contribution of two cases. The work presented by Lewis and Mosenthal suggested that the diagnoses were largely based upon the facts that the patients had a glycosuria which was independent of the diet, and that there were no diabetic symptoms. Bailey determined by means of the glucose tolerance test that his patients were excreting sugar in the urine at a time when the blood sugar was normal, and in this manner demonstrated the point of permeability of the kidney and its relationship to renal diabetes.

The manner of determining the point of permeability of the kidney is by means of a glucose tolerance test, taking simultaneous specimens of blood and urine. This is accomplished by obtaining simultaneous specimens of blood and urine in the morning on a fasting stomach. Then 100 grams of glucose is administered through the medium of lemonade or tea. Simultaneous blood and urine specimens are taken every hour for three hours.

If one selected at random ten individuals both normal and with glycosuria, and studied the reaction of each of these individuals to the administration of 100 grams of carbohydrate on a fasting stomach, the response of each would be different. Some would show no glycosuria within a three-hour period, some would show but a slight trace of sugar in the urine, and others would show a marked glycosuria.

Myers<sup>3</sup> is responsible for the statement that up to 1920, thirty cases with characteristics sufficient to warrant a diagnosis of renal diabetes have been published in the literature.

The following case is reported as presenting a glycosuria which is probably of renal origin:

July 14, 1924. Patient, male, age 26. Complaint, diabetes. Duration two and one-half years.

Present illness. Two and one-half years ago patient went to Veterans' Bureau for a physical examination, and here it was discovered that he had sugar in his urine. He was advised to go under treatment for several weeks at a hospital, but refused treatment. Six months later he consulted his private physician who also advised him that he had sugar in his urine, and he was put upon a vegetable diet. He continued this diet for nine months but noticed no appreciable difference. He then broke his diet and

## DAILY URINARY REPORT

Date	Vol. C. C.	Sp. Gr.	Alb.	Acetone	Diacetic Acid	Reduction Per cent	Total G.	Blood Sugar Per cent
July 15	750	1030	—	+	+	.005	3.75	
16	1650	1018	—	+	—	.00	2.0	
17	2040	1014	—	+	—	.0014	2.85	
18	2400	1020	—	+	—	.0017	4.08	
19	1710	1019	—	++	+	Trace		110
21	1380	1024	—	+	—	.0016	2.2	98
Aug. 1								103
Sept. 5	2000	1020	—	—	—	.002	4.0	64

## DIET IN GRAMS

Date	Carbo-Hydrate	Protein	Fat	Calories	Total Glucose	Fatty Acid	Body Wt.
July 14	46	63	167	1951	100	179	141½ lbs.
15	46	63	167	1951	100	179	
16	63	76	232	2632	129	244	
17	63	76	232	2632	129	244	
18	63	76	232	2632	129	244	
19	132	76	232	2935	199	244	
21	132	76	232	2935	199	244	
Aug. 1	132	76	232	2935	199	244	143-5 oz.
Sept. 5	132	76	232	2935	199	244	143 lbs.

again he noticed no difference. He feels that he has lost no weight in the last six years.

**Past History.** Tonsillitis, measles, mumps and chicken-pox. No rheumatism, no scarlet fever, no diphtheria, no whooping cough, no pneumonia and no small-pox.

**Family History.** Father and mother living and well. One sister dead. Pneumonia. No chronic diseases.

**Personal History.** Head: Complains of headache both in the frontal and occipital regions, dull in character. No dizziness. No faintness. Eyes: Has worn glasses for two years. Vision is very poor in the left eye. No pain. Ears: No deafness. No earache. No discharges. Nose: Normal sense of smell. No discharges. No epistaxis. Mouth: Has had seven teeth extracted on account of dental caries. No thirst. No soreness. Neck: No swellings. Has had tonsillitis. Lungs: Does not take cold easily. Has had no night sweats. Has not lost weight. No pneumonia. No pleurisy. No cough. No blood spitting. Heart: No shortness of breath. No pain. No swelling of feet or ankles. Stomach: No excessive hunger. No belching of gas. No pain. No thirst. No indigestion. No vomiting. Intestines: No constipation. No diarrhea. Genitourinary: No venereal infection. No frequency. No blood. No pain. Extremities: As a child was accidentally scalded on the left leg. No swelling. No abnormal sensations.

**Physical Examination.** Patient is a tall, slender individual with a soft plastic skin. Naked weight 134 lbs. 3 oz. Dressed weight 141½ lbs. Height 5 ft. 9 in. Head: No exostoses or depressions. Eyes: React well to accommodation and light. Movements normal. Conjunctiva clear. No scars. Vision poor. Nose: No deformities. Mouth: A number of teeth have been extracted. Inflammation of the mucous membrane around the left lower canine tooth. Marked irregularity in tooth placement. Tongue clean. Pharynx and tonsils normal. Reflexes normal. Neck: No glandular enlargement.

**Thorax.** Lungs: Negative to inspection, palpation, percussion and auscultation. Heart: Pulse rate is 68. Good volume and tension. Blood pressure 138-80 in reclining position. L.B.C.D. 8 cm. from mid-sternum. R.B.C.D. 1½ cm. from mid-sternum.

**Abdomen.** Negative to inspection, palpation and percussion.

**Extremities.** There is a scar on the left leg covering the entire anterior and lateral portion. Ingrown toe nail on the right large toe. Reflexes present and active.

**Summary of History and Physical Examination.** History of diabetes of two and one-half years' duration. Defective vision. No diabetic symptoms. Physical examination reveals individual slightly under weight; disturbance in vision; scar on left leg.

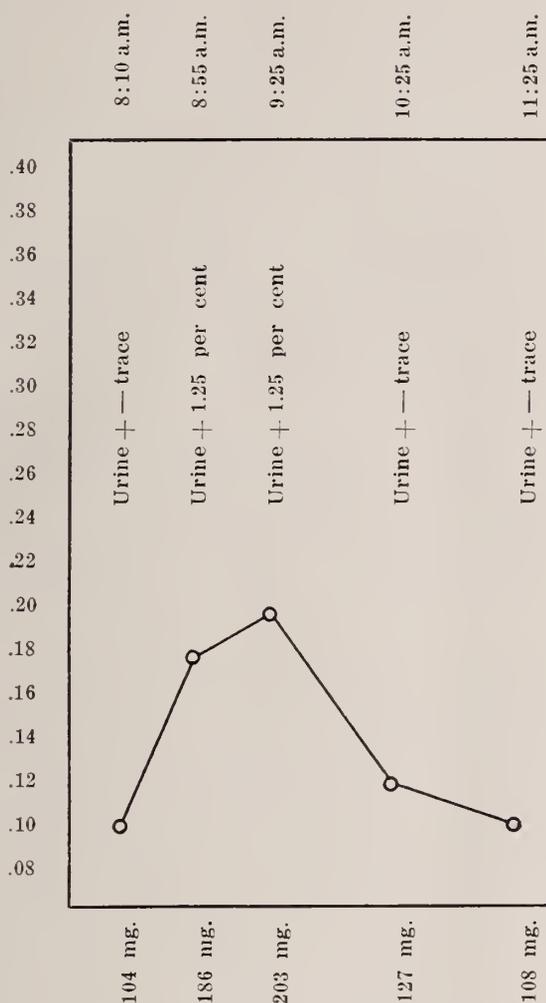
**Laboratory Record.** Urine: Quantity 750 c.c.; specific gravity 1030; albumin negative; casts negative; acetone and diacetic acid one plus; sugar one plus; percentage .005%; total grams 3.75 Wassermann report negative; initial blood sugar reading 98 mg. per 100 c.c.

The patient was early submitted to the glucose tolerance test. The results of these observations appear in graphic form upon the accompanying chart. It will be observed that on a fasting stomach, with a normal blood sugar reading of 104 mg. per 100 c.c. of blood, this individual had a trace of sugar in the urine. It will further be observed that at the end of 45 minutes, when the blood sugar concentration was 186 mg. per 100 c.c. of blood, sugar was present in the urine to the extent of 1.25 per cent. At the end of 75 minutes the blood contained 203 mg. of sugar and the urine 1.25 per cent. At the two-hour interval the blood reading was 127 mg. with but a faint trace of sugar in the urine. At the three-hour period the blood sugar was 108 mg. with but a trace of sugar in the urine. These readings do not bear out the postulate that the glycosuria should be independent of the ingestion of carbohydrate. However, when one watches the glucose fluctuations in the diet this does appear to be true.

The initial ingestion of glucose on a dietary basis was 100 grams in twenty-four hours' time. On this diet the patient readily showed a normal urine. After two days' time the glucose intake was shifted to 129 mg., where it remained for three days' time. On the third day there was an output of 4.08 grams

## SUGAR TOLERANCE TEST

100 grams glucose given in hot tea at 8:25 a.m. on fasting stomach.



of sugar. After three days on a diet containing 129 grams of glucose the blood sugar reading was 110 mg. per 100 c.c. The diet was next altered to contain 199 grams of glucose, upon which basis the patient was discharged. The urine was normal at the time of discharge and the blood sugar reading was 98 mg. per 100 c.c.

At the end of one week the patient returned for observation. The blood sugar reading at this time was 103 mg. per 100 c.c. One month later the urine showed a total output of sugar of 4 grams and the blood sugar reading was 64 mg. per 100 c.c. All of the blood sugar readings, with the exception of those incidental to the sugar tolerance test, were taken in the morning before breakfast on a fasting stomach.

From the standpoint of treatment this individual has been put on the following diet: Protein 76, car-

bohydrate 132, fat 232, glucose 199, fatty acid 244 and calories 2935. He has gained two pounds in weight in a five week period and is free from diabetic symptoms.

## SUMMARY

Here is an individual showing a mild glycosuria, with a normal glycemia, without diabetic symptoms. The glycosuria is in a large part independent of the ingestion of carbohydrate. With these findings he may be classed as a renal diabetic. The sugar tolerance test suggests a slight disturbance in the metabolism of glucose, and the case will bear close watching to determine whether or not his present symptoms are not the prodromal symptoms of a true diabetes mellitus.

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## GAUCHER'S DISEASE—REPORT OF A CASE\*

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Gaucher's disease is a symptom-complex of extremely rare occurrence, only thirty cases having been reported since the year 1882, when it was first described by Gaucher. Aside from its rarity the condition is interesting enough from the point of view of pathologic physiology to warrant the report of the following case.

The patient, H. W., is a 56-year-old man, born in the U. S. A. of English descent, a music teacher by occupation and married. He presented himself at our office on July 29, 1924, complaining of weakness following intestinal hemorrhage.

His family history was good. In his personal history we found that he was singularly free of the more common infections of childhood, having had only the measles and one attack of tonsillitis in his boyhood. Neither did he give any history of infection in his adult life, whether venereal or non-venereal.

As far as his present illness is concerned, he stated that fourteen years ago he suffered the first attack of intestinal hemorrhage, followed by a feeling of extreme lassitude. The first physician, whom he consulted, diagnosed hemorrhage from a duodenal ulcer and advised an immediate operation. The patient was not satisfied, however, with his diagnosis and advice and consulted another physician, who confirmed the diagnosis of the first physician, and also advised an operation. Not yet being satisfied, the patient consulted a third physician, who was the first to discover in him an enlarged spleen and enlarged liver, and who attributed the hemorrhage to a cirrhotic condition of the liver, and not to a duodenal ulcer. Two years after this

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last consultation the patient suffered another attack of intestinal hemorrhage, though not quite as severe as the first one. His third attack of intestinal hemorrhage occurred on July 27, 1924, twelve years after the second attack, when he came to me for an examination. During the long stretches of time between the attacks of hemorrhage, a period of fourteen years, the patient felt fairly well, able to do his daily work, though never robust.

On examination I found a rather slim man, being nearly six feet tall and weighing only 140 pounds. His skin was pale, with a peculiar brownish-yellow discoloration over the upper part of his chest and back, both shoulders and arms and right leg, with only a few brown spots on his face. The right eye showed a wedge-shaped thickening of the conjunctiva with a distinct brown spot between the cornea and the inner canthus. The conjunctiva of the left eye did not show any such abnormality. His teeth were extracted and tonsils were removed. His chest was flat and narrow and abdomen was large and barrel-shaped, and by palpation and percussion one could make out an enlarged spleen and an enlarged liver. The lower border of the spleen reached the anterior superior spinous process, the inner border extending to within an inch of the umbilicus. The lower border of the liver could be palpated two inches below the costal margin. There was no enlargement of the superficial lymphatic glands.

The blood pressure was 150 systolic and 90 diastolic. The blood examination showed a negative Wassermann reaction, coagulation time somewhat prolonged, the fragility of the red cells within the limits of normal, hemoglobin 80 per cent (Dare), 4,000,000 red cells and only 4200 white cells. This leucopenia persisted on several subsequent examinations, the white cell count never reaching above 4500. The differential count gave 72 per cent polymorphonuclear cells, 23 per cent lymphocytes, 3 per cent eosinophiles and 2 per cent basophiles.

The urine showed a very distinct urobilin reaction, otherwise presented no abnormalities. The stool specimen, which the patient brought with him at his first visit, was black and gave a decided blood reaction. Several subsequent examinations of his stool showed a gradual decrease of blood, until not even occult blood could be demonstrated.

I diagnosed the patient's condition as Gaucher's disease.

As there is no treatment for this abnormality, he was advised to abstain from work until he recuperated his usual strength; he was given such a diet as would not stimulate excessive peristalsis, which might start another hemorrhage. An iron and arsenic preparation was administered with the object of improving the anemic condition caused by the loss of blood. The patient has been doing well up to the present day and has not lost a day's work.

#### COMMENT

The finding, which is really pathognomonic of Gaucher's disease, is the characteristic epithelial cells, found in the pulp of the spleen, as first described by Gaucher. But as a splenectomy was not performed on our patient, and as a diagnostic puncture of the spleen would not be a safe procedure in this case, we had to base our diagnosis upon the physical signs, symptoms and laboratory tests, as well as upon the exclusion of the other syndromes with splenomegalies.

Our case was characterized by (1) an unusual long duration (over fourteen years), (2) mild na-

ture of symptoms, (3) a greatly enlarged spleen and moderately enlarged liver, (4) leucopenia, (5) brown discoloration of the skin, (6) wedge-shaped thickening of the conjunctiva, (7) urobilinuria, (8) mild anemia of the chlorotic type, (9) normal fragility of the red cells, (10) slight tendency to intestinal hemorrhage. All the above named signs, symptoms and tests we find in Gaucher's disease. On the other hand, we excluded the following splenomegalies, from which Gaucher's disease must be differentiated: (1) hemolytic jaundice (acquired or familial), (2) polycythemia vera (Vaquez's syndrome), (3) Banti's disease and (4) Hanot's cirrhosis of the liver.

In hemolytic jaundice we have the jaundice, increased fragility of the red cells, recurrent attacks of abdominal pain and fever with leucocytosis, and more frequent attacks of gastrointestinal hemorrhage. In polycythemia vera there is an increased number of red cells (polycythemia), a bluish-red color of lips and skin, a shortened coagulation time of the blood, a normal or increased white cell count, great weakness, a variety of nervous symptoms and a much shorter course of disease. In Banti's disease we find a more profound anemia, distress and feeling of weakness, pallor and eventually jaundice, ascites and cirrhosis of the liver, a spleen just moderately enlarged, and more frequent and severe hemorrhages. In Hanot's cirrhosis there is the characteristic deep jaundice, recurrent febrile attacks, pain in right and left hypochondrium, as well as in the abdomen, leucocytosis, a moderately enlarged spleen and a short course of duration (about 4-5 years). All of the above signs and symptoms were absent in our case.

As to the nature of Gaucher's disease, we must admit that we are still in the dark. Gaucher himself considered the condition to be a primary epithelioma of the spleen; in that case the involvement of the liver, bone marrow and lymph nodes will have to be looked upon as being metastatic. However, when we consider the extreme chronicity and mild nature of the symptoms, as well as the morphology of the characteristic Gaucher cells found in the spleen, bone marrow, liver and lymph nodes, the neoplastic theory must be rejected. There is apparently a toxin of low virulence, as suggested by H. Pool and Stillman, bacterial or metabolic in its nature, which may be responsible for all the phenomena found in this syndrome. The enlargement of the spleen is not difficult to explain when we recall that the spleen acts as a filtre, concentrating

the noxious agents, whatever they may be, and leading to hyperfunction and hypertrophy.

Syphilis was suggested by some authors as the cause of this condition, but no proof was offered. When we recall how widely spread syphilis is and how extremely rare Gaucher's disease is, one is not inclined to consider syphilis as the cause of it.

And now a word as to splenectomy for the relief or cure of Gaucher's disease. In view of the fact that splenectomy has been eminently successful in the treatment of hemolytic jaundice and Banti's disease, one might be tempted to try the same method in Gaucher's disease. Considering, however, the mild nature of the symptoms and the extreme chronicity of the disease, one is not justified to subject the patient to such an operation, especially if one takes into account the high mortality of splenectomy in this disease, and the fact that the disease is not local but general, the characteristic epithelial cells being found in the liver, bone marrow and lymph nodes besides the spleen.

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### THE MAXILLARY SINUS OPERATION\*

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The object of this paper is to urge on you less radical means of surgical treatment in empyema of the antrum of highmore, and to present a description of the operative procedures that have given the most success in my hands.

When I first attempted this work twenty-five years ago and used the technic then in vogue, my work was characterized by frequent failures, which were alike disappointing to me and discouraging

to the patient. But as years went on I became convinced that my troubles were due to two main causes: an attack through the canine fossa and use of the curet. The opening through the canine fossa is disagreeable to the patient, at times results in impaired function of the teeth and fistula into the mouth, and worst of all permits a view into the sinus which encourages the overzealous in the use of the curet.

My first step in success in this work was when I laid down for myself law number one, that the canine fossa must never be opened on any initial operation; my second step in success was when I stopped using the curet in the antrum.

The most seemingly hopeless case will rapidly recover if the sinus is drained and well ventilated. The mucous membrane will rapidly recover and the polypi disappear, when the antrum becomes dry.

If the sinus is curetted and healing by granulation tissue is necessary, the patient is subjected to a long, tedious after treatment, which is not due to the antrum disease but the loss of mucous lining. Frequent washings are necessary, while there is great difficulty in keeping the nasal opening clear. The sinus is washed as long as it discharges, and it will discharge as long as it is washed.

When first I attempted the nasal operation, I had considerable difficulty in preventing the nasal opening from closing up. The secret of success here is to make the opening a large one and to obliterate the anterior angle.

I remove the anterior third of the lower turbinate and the nasal wall of the sinus below the attachment of the lower turbinate forward and backward as far as possible. However, it was in removing sufficient bone forward that I met my greatest difficulty. I felt sure that the success of the Denker and Canfield operation was due to the fact that they removed enough of the bone to obliterate the forward angle.

The problem that I wished to solve was a method of doing this by an internasal route without disturbing the tissues of the mouth. I devised a back cutting chisel which is simply an enlargement of a Myle's sphenoid sinus chisel, and with which I have no difficulty in removing the required amount of bone. I usually retain the mucous membrane and periosteum of the bony wall to be placed as a flap on the floor at the end of the operation.

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## IMPRESSIONS OF OPHTHALMOLOGIC ACTIVITIES ABROAD\*

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In the narration of the impressions as indicated above I cannot do better than to begin by mention of a visit to the clinic of Dr. Victor Morax, whose principal workshop is at the Hospital Lariboisière. Many of my hearers have undoubtedly witnessed the work of this master technician in ophthalmic surgery.

Sterilization of instruments here is by dry heat. Small metal boxes are provided, in each of which a set of instruments is placed. A number of sets for cataract operations, a number for all the routine operations. These sterile instruments are kept in the instrument cabinet and used when wanted. This plan is largely followed throughout France. In the operation for the removal of cataract a number of methods are employed, depending on the indications in the individual case. Incision in vascular tissue, usually at the limbus, with or without a conjunctival flap or with a conjunctival bridge. Simple extraction is the rule. This is always done when a conjunctival bridge is made. Capsule forceps are not used as a routine procedure. Irrigation is not employed during the operation, either for cleansing the conjunctival sac or for removing loose lens debris from the anterior chamber. Extraction in the capsule is seldom resorted to.

In the operation for glaucoma trephining and the Lagrange methods are employed approximately equally. In performing the Lagrange operation the keratome is often employed for making the incision. The excision of sclera is done with the Vacher punch. A peripheral iridectomy rather than a complete iridectomy is usually made.

In operating for the cure of chronic dacryocystitis and mucocycle the Toti operation is largely substituted for excision of the sac. It is done under local anesthesia. The results after the Toti operation are apparently more satisfactory than after excision of the sac, as epiphora is done away with, but when blowing the nose air may dilate the sac and give some annoyance.

The study of pathologic tissue, laboratory work and the employment of colored and noncolored photography are features at the Hospital Lariboisière.

On November 9 I had the honor of visiting the ophthalmic hospital at Bordeaux, presided over by

Prof. Lagrange, as the guest of that celebrated ophthalmologist. Prof. Lagrange showed me many patients, on whom he had performed his operation for glaucoma, the time of the operation dating from three weeks to twelve years. The results were excellent. In performing his operation he uses a narrow Graefe knife for the incision known as the Lagrange sclerotome. The excision is usually  $5\frac{1}{2}$  mm. in length. Excision of the sclera is made with the Vacher punch which is used a number of times, if necessary, to remove the desired amount of scleral tissue.

In operating for the removal of cataract the combined method with conjunctival flap is employed. Cortical lens substance is removed by expression. Irrigation of the anterior chamber is not employed.

Prof. Lagrange practices an operation for detached retina, having for its object increase in intraocular tension. The operation consists in making approximately three rows of punctate cauterizations in a zone about four millimeters wide in the sclera, the inner margin of which zone is  $\frac{1}{2}$  mm. from the limbus. The cauterizations encircle one-half the circumference of the cornea at one sitting. After healing is complete (three to five weeks) the remaining half of the zone is cauterized, if thought necessary. It is held that reattachment of the retina occurs in a low percentage of cases, if the tension of the eyeball is restored to normal, and this result is sought by closing the lymph spaces at the filtration angle by cauterization.

At Marseilles the author had the pleasure of visiting the hospital in which Jaques Daviel is said to have perfected the technic for the extraction of cataract, on which our present technic is based. The hospital, known as the Hotel Dieu, was erected by Louis XIV. It is of very substantial construction. Its exterior, which is in excellent condition, is as substantial as when erected. The interior remains much the same except that the sanitary arrangements, operating rooms, laboratories, etc., have been and are being placed on a modern basis. Because of Daviel's long connection with the institution the hospital is regarded as a monument to his genius and it is sought to perpetuate it as such. Daviel's bust in bronze on a suitable pedestal occupies the center of the open court in front of the hospital.

The following inscription in French is engraved in the panels of the pedestal: "Jaques Daviel, 1693-1762. Performed the first operation for cataract April 2, 1745 in Marseilles. Born in Barre, Normandie, Aug. 11, 1693. Surgeon Marseilles 1721-

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1722. Master of Surgery 1722, Surgeon Hotel Dieu 1723-1732. Professor and demonstrator of anatomy 1728-1746. Surgeon oculist to the King. Member Royal Academy. Died at Geneva, September 30, 1762."

In Geneva in the cemetery of the Grand Soxonix Church on the stone wall which surrounds the cemetery to the left of the entrance is a marble slab near the top of which is a medallion bust of Daviel with an inscription "Post tenebras lux." Below in French it is stated that he who first cured cataract by extraction is buried in this cemetery. Erected in 1885.

Professor Eduward Aubaret, now at the head of the eye department at the Hotel Dieu, is justly proud of his association with the institution rendered famous in the ophthalmologic world by the work of Daviel. He warmly welcomes ophthalmic surgeons who make a pilgrimage to this shrine to the development of this branch of surgery.

In the excellently appointed private hospital of Dr. Barraquer, in Barcelona, Spain, I witnessed an operation for the removal of cataract by his method. The lens was large, globe prominent and myopic, a difficult condition for successful removal of cataract by any method. The incision which was made at the limbus, forming a narrow conjunctival flap, was followed by a peripheral iridectomy. The lids were raised by means of lid retractors by an assistant, the lens seized by the terminal or suction portion of the erisophaque and the lens in capsule dexterously removed without any presentation of vitreous body. The wound was closed by means of three fine conjunctival sutures.

Dr. Barraquer presented for my observation a number of private patients, on whom he had recently operated and also a number on whom the operation had been performed a considerable time previously. The results in the cases observed certainly left little to be desired.

In Cairo, Egypt, the author had the good fortune to find Dr. A. E. MacCallan at his post. During his sojourn in Egypt, which began in 1903, Dr. MacCallan has performed a monumental work. As is well known, Egypt has for many years been one of the most afflicted countries on the face of the globe so far as trachoma and purulent and mucopurulent eye diseases are concerned. During the French military occupancy of Egypt, in 1854, it is stated that at least one-third of the fighting units was incapacitated because of eye disease, principally trachoma.

MacCallan with an original fund of £40,000 given by an English gentleman was, under the auspices of the English government, authorized to institute measures to mitigate this condition. He established ambulatory ophthalmic hospitals—eventually nine in number—equipped them, supplied the necessary personnel and kept them at work. Such a hospital consists of tent rooms, placed in a compound. A hospital is stationed at one place for a number of months, then is moved to another center. In this manner the beneficent work is carried to all parts of the country. MacCallan has gradually established permanent ophthalmic hospitals. I am informed that at the time of his leaving Egypt, in the early part of 1924, he had established nineteen permanent eye hospitals and that there were still five ambulatory hospitals in operation. Even with this large efforts at relief the evidence of eye disease still present in Egypt is appalling.

The island of Ceylon has an area of 25,332 square miles and a population of between four and five millions. There are fifty-four government general hospital stations and three ophthalmic hospitals. At Colombo the general and the ophthalmic hospitals are in close proximity but under separate heads, working independently except that the ophthalmic laboratory work is conducted in the laboratory of the general hospital. The ophthalmic hospital is a model institution for that climate. It is built on the cottage plan, is commodious, clean, sanitary, and is conducted ideally. The hospital is under the direction of Dr. Andreas Nell, of Dutch extraction, educated in England, his ophthalmic training having been obtained principally in London. Dr. Nell is the chief surgeon. He is assisted by a native staff.

The method of cataract removal here is by incision at the limbus, with short conjunctival flap and small peripheral iridectomy. Simple extraction is done at times and removal in capsules in selected cases. I saw a number of patients recently operated on and was very much pleased with the excellent results obtained. The general condition of the people in Ceylon is good. Trachoma and cataract are moderately prevalent only. In operating for glaucoma trephining is usually performed.

The ophthalmic hospital next visited was that made famous by the work of Col. R. H. Elliot and Col. Kirkpatrick in Madras, India. The hospital consists of an administration and hospital building, each two stories and of brick, and an "out door" department in a one story frame building of liberal dimensions. The inpatient department

has upward of one hundred beds. In the Presidency of Madras, having an area of 142,330 square miles, there was a population of roughly, forty-one and a half million in 1911. The Madras Ophthalmic Hospital draws not only from this but also from neighboring areas, so that its clinical material is very large. Cataract, glaucoma and trachoma occur frequently.

The Col. Smith operation is seldom performed at this hospital. The method employed by Major Verdon, the surgeon temporarily in charge, was as follows: A limbal incision with medium conjunctival flap, capsulotomy and peripheral iridectomy. In the surgical treatment of glaucoma trephining was employed almost exclusively. The operative work at this hospital is of a high order.

Largely through the efforts of Col. Elliot excellent provision has been made here for graduate work. Lecture rooms, laboratories, a library, a pathologic museum, all well equipped, are found here. A comprehensive graduate course is conducted each year by the hospital staff which usually consists of two Europeans and a number of trained Indian medical men.

The government ophthalmic service in Calcutta is in charge of Col. W. V. Coppinger. His department at present is housed in the old general hospital building but a large new stone and cement building, designed for the ophthalmic department, is nearing completion. This building is commodious. It will have a bed capacity for patients of about seventy-five, will be supplied with operating rooms, laboratories, x-ray plant and lecture room, and will have facilities for treating large numbers of outpatients. Systematic graduate instruction is contemplated. Col. Coppinger has one European and a number of native medical men associated with him. His clinical material is very large.

In the operation for the removal of cataract Col. Coppinger opens the capsule of the lens by means of the cataract knife, when making the corneal section. The section is made to include almost one-half the circumference of the cornea, is in or very slightly back of the limbus. A conjunctival bridge is made. The expression of the lens follows the making of a peripheral iridectomy, often through a radial slit in the conjunctival bridge. Atropine dilation of the pupil precedes the operation. In his effort to render the conjunctival sacs aseptic, he treats them above and below by swabbing with a 1 per cent solution of picric acid, dissolved ordinarily in alcohol. After an interval of one minute the

picric acid is removed by irrigation, using normal saline solution. The conjunctiva and cornea are rendered slightly hazy by the picric acid but not enough so to complicate the operation. Col. Coppinger states that suppuration is virtually done away with by this procedure. The results observed were excellent.

One who travels in India cannot escape the conviction that the native population suffers largely from insufficient nutrition and this apparently is the cause of the large number of cataract patients that develop in that country. Glaucoma and trachoma and their sequelae are frequently met with and there is in addition a large number of cases of mucopurulent conjunctivitis, mostly of the Koch-Weeks variety. Cataract is more prevalent in India than in any other of the countries visited.

At Rangoon, Burma, the government medical officer in charge of ophthalmic work is Lt. Col. R. D. Saigol. The ophthalmic department is located in the general hospital building, a fine, large two story brick structure admirably adapted to the service in that warm climate. The accommodations for ophthalmic inpatients includes only about twenty beds. The dispensary for the treatment of ophthalmic outpatients is amply large to accommodate all who apply. Laboratories and quarters for animals are a part of the equipment.

This was the only place visited in which an operation resembling the "Smith" operation for the removal of cataract in its capsule is performed as the routine operation. I am informed, however, that in the north of India, at or near Amritsar, the site of Col. Smith's late activities, there is a European surgeon who practices the "Smith" operation. From these facts it would seem that the so-called "Smith" operation as a routine measure is not in high favor with many ophthalmic surgeons in India at the present time.

Lt. Col. Saigol's technic is much as follows: Local anesthesia with a solution of cocaine, commenced twenty to thirty minutes before operation. When on the operative table, the eye lashes are cut off and an injection of novocain, 2 per cent, is made into the subcutaneous tissue of upper and lower lids, using three to four c.c. of the solution. The conjunctival sacs are then quite thoroughly irrigated with a solution of mercuric bichloride, 1-3000, the excess of the solution being removed by dry sterile absorbent gauze. The lids are then controlled by an assistant who raises the upper and lower lids on a double hook lid retractor. The

incision is made upward and includes almost one-half of the circumference of the cornea, beginning at the limbus and ending in clear cornea, one-half to one mm. in front of the limbus. A small peripheral iridectomy is now performed. Both lids are now raised from the globe and by means of the large strabismus hook, Smith model, pressure is made three to four mm. above the limbus at the lower margin of the cornea and the lens expressed. The iris is then restored to its normal position by means of a spatula, a solution of eserine  $\frac{1}{2}$  per cent instilled, and the dressing applied.

I witnessed three operations, in which the capsule ruptured as the lens was escaping in two. A part of the capsule hung out of the wound in both. In one the entire capsule was removed by seizing the exposed portion with milled dissecting forceps and withdrawing it. The second was partly removed in the same manner. There was no loss of vitreous body in any of the cases, and when the eyes were closed, just before the dressings were applied, the pupils were central and clear. I saw a number of patients on whom this operation had been performed and am pleased to testify that the results were excellent. In only one case was the iris adherent to the wound. In this operator's hands the operation appears to be excellently adapted to the class of patients that he has to deal with.

The Burmese are governed by the English. They are in much better physical condition (apparently better nourished) than are the Indians and cataract is much less prevalent among them. In all of the English colonies visited the author found large, well equipped general hospitals, and in a number of the large cities very excellent ophthalmic hospitals either separate or forming part of a general hospital.

In Siam I found no medical man who is devoting himself entirely to ophthalmic work, nor is there any hospital or dispensary given over wholly to the care of ophthalmic patients. Patients with eye disease, who apply for relief at the out-door departments of general hospitals, are cared for as far as possible by the medical men in charge. Those of the better classes who suffer from eye affections go to Saigon, Hongkong, Singapore, or some other city in search of relief. There is a desire on the part of the nobility of Siam to place its hospitals on a modern basis and there are one or two good general hospitals in Bangkok. Financial support and influence could be obtained for the development of a good ophthalmic hospital, should a well

equipped, energetic ophthalmic surgeon wishing to develop such a work, locate in Bangkok.

Eye disease is less prevalent in Siam than in either India or Burma but in a population of about nine million people a sufficient number of eye cases develops to furnish abundant material to keep a good sized ophthalmic hospital and dispensary well employed. Although Siam is an absolute monarchy, the people appear to be contented and prosperous.

In Hongkong, with a population of 625,000, there is no hospital given over to the treatment of eye diseases, nor is there any medical man who devotes himself wholly to the treatment of such diseases. Dr. G. Montague Harstin, an able English physician, devotes the greater part of his time to ophthalmic practice, conducting an ophthalmic clinic in one of the large general hospitals. However, in addition to his ophthalmic work, he does general medical practice.

In Shanghai a feeble clinic in eye and ear work is conducted by a native medical man in connection with St. Luke's hospital, and a similar clinic is conducted three times a week at the Chinese hospital. There is a well equipped Edinborough ophthalmic surgeon in Shanghai who confines his practice to diseases of the eye, who is well established and who I am informed has a large practice. There is a large permanent and a large floating foreign population in this city.

The only school for the systematic teaching of modern ophthalmology in China that the author is aware of is the department of ophthalmology of the Peking Union Medical College. The head of this department, the professor of ophthalmology, is Dr. Harvey J. Howard. He is assisted by an able native staff of five or six graduate medical men. Dr. Jhi Li, one of the number, is associate professor. There are also two internes. The department is excellently equipped with laboratories, lecture rooms, rooms for special research work, animal quarters, etc. During the year of my last visit, Prof. A. Fuchs, of Vienna, was visiting professor of ophthalmology, and was principally engaged in teaching ophthalmic pathology.

Strange as it may appear, the clinical material that comes to this department is not as plentiful as is desired. The number of cataracts annually operated upon averages fifty to seventy-five. Cataract does not appear to be a very common affection among the Chinese nor is glaucoma very frequent. Nearly all of the young medical men who are doing or who contemplate doing ophthalmologic work in

China, take graduate work at this institution. Under the able direction of Dr. Howard this department has reached a high degree of efficiency and is doing very creditable work. According to Buddhist representations, the treatment of eye diseases in China is not confined to man, but it is a function of special gods as well.

In Japan there are five Imperial Universities, in four of which I am informed there is a fully equipped department of ophthalmology with ample facilities for undergraduate and graduate work. In Tokyo this department is under the direction of Professor M. Komoto, whose writings are known throughout the civilized world.

In Kyoto the ophthalmic department, housed in a large separate building in the compound of the large general hospital, is under the direction of Prof. Ichikawa, a very able, highly educated gentleman, who is full time professor. Prof. Ichikawa, together with two associates, has recently completed a system on ophthalmology in three volumes, published in Japanese. The surgical material here is large. There are two regular operating days each week, on which occasions a large number of operations are performed.

Prof. Ichikawa is a skillful operator. The technic for the removal of cataract as performed here consists in making an incision at the limbus with short conjunctival flap, including two-fifths of the circumference of the cornea, removal of a portion of the lens capsule by means of toothed capsule forceps, making a small peripheral iridotomy and expression of the lens. During expression the lids are raised from the eyeball by means of an eye speculum especially designed for that purpose. Irrigation is not employed.

In the treatment of secondary or capsular cataract, a small limbal incision is made with a keratome. The capsule is grasped with forceps and all or a part of it is removed by drawing it out through the incision.

Zur Nedden's operation, which consists in removing a few drops of the vitreous body by aspiration, in cases of cloudy vitreous or hemorrhage into the vitreous, is practiced quite largely in this clinic. Creditable research work is conducted in the ophthalmic departments of the Universities of Japan.

#### SUMMARY

In closing, I wish to call your attention to some of the different methods employed for the removal of cataract by different excellent operators, all of whom have good results and all of whom have

chosen the particular form of technic because in their hands it succeeds best.

1. The "combined extraction," incision in limbus with or without a conjunctival flap, practiced by Lagrange and many others.

2. Simple extraction with incision as above, practiced by many operators.

3. Incision as above, peripheral iridectomy, capsulotomy, expression of lens. Dr. Nell and others.

4. Incision as above. Peripheral iridotomy, removal of a portion of lens capsule with toothed forceps, expression of lens. Prof. Ichikawa and others.

5. Incision as above but with conjunctival bridge. Capsulotomy with cataract knife, when making the corneal incision, peripheral iridectomy, expression of lens. Col. Coppinger.

6. Incision almost one-half the circumference of the cornea, terminating in clear cornea one to one and half mm. from the limbus, peripheral iridectomy, expression of the lens in its capsule. Col. Saigol.

7. Extraction of cataract by means of the erisphaque. Prof. Barraquer.

The variations in technic adopted by various able men illustrate the individual variation in adaptability. There are probably no two operators whose technic is exactly the same. Because of these facts we should be slow to denounce the claims of any able man regarding the good results obtained by any form of technic that he may employ. There is one point in the technic that is now very generally adopted, namely, in regard to the site of the incision. By far the greater number of surgeons make the incision for the removal of cataract in vascular tissue at or just back of its limbus. My experience has led me to believe that down growth of epithelium into the anterior chamber does not occur when the incision is made in vascular tissue.

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**A Physical Problem in Bilateral Hydrothorax—**  
A case of bilateral hydrothorax of an extreme and persistent degree accompanying a severe nephritis was recently under observation by Harry D. Piercy, Cleveland (*Journal A. M. A.*, Jan. 17, 1925), for a period of more than ten months. The rapidity and regularity with which the fluid accumulated made aspiration of the chest imperative at frequent intervals. Unilateral aspirations of the chest, however, constantly provoked severe cardiorespiratory reactions, and these became so severe that the problem of the method of their production demanded solution. The exclusion of other factors resolved this problem into one of displacement of the mediastinum due to disturbance of the fluid pressure acting on it. The recognition of this fact led to the aspiration of the two chests, simultaneously, with the result that the cardiorespiratory reactions no longer occurred. A survey of the literature has not disclosed a similar discussion and management of this problem.

### MORSE FACE SHIELD AND MIRROR PROTECTOR\*

A. W. MORSE, M.D.  
BUTTE, MONT.

I have been using a face shield and mirror protector which is simple, and can be placed in any position from either side. It is always at hand, does not attract attention of the patient, and protects the nose and mouth.

To the ordinary head mirror an additional post is swedged directly opposite to the one for the clamp, holding the mirror to the head band, and exactly like it in position and size. The shield is a round, slightly concave, aluminum disk, one inch more in diameter than the mirror. On the concave side, a post, similar to the one on the mirror, is swedged one-half inch from its edge. With a clamp, like the one holding the mirror to the head band, the shield is swung from the lower post on the mirror (fig. 1). This allows the shield to be slid over the mirror when not in use, and protects the mirror (fig. 2). When in use, the mirror is placed on the head in the usual way, and the shield slid down fan-wise (not moved at right angles from the mirror) over the face, with the convex side toward the face (fig. 3).

\* Read before the Twelfth Annual Meeting of Pacific Coast Oto-Ophthalmological Society, Portland, Ore., July 10-12, 1924.



Fig. 2.



Fig. 3.



Fig. 1.

**Anaphylactic Shock Following Use of An Organic Coagulant**—Bernard E. Sayre, Chicago (Journal A. M. A., Jan. 3, 1925), relates a case of a severely toxic goiter in a man, aged 30, in which, after enucleation of the gland, a continual oozing on the left side of the trachea could not be stopped. As the bleeding was very close to the recurrent laryngeal nerve and ligation not practical because of the danger of injury to the nerve, an organic blood coagulant (coagulose) was applied to the bleeding surface, the area packed with gauze, and the incision sutured in the usual manner. The blood pressure before operation was 160 systolic and 80 diastolic. During operation, it rose to 180 systolic and 90 diastolic, and at the close of the operation the blood pressure had dropped to 165 systolic and 85 diastolic, with a pulse of 120. The patient was breathing well and appeared in good condition. About fifteen minutes after the application of the blood coagulant, the patient suddenly became cyanotic, breathing with great difficulty and inspiring in short gasps. Foam appeared at the mouth. Within a minute or so, breathing ceased. The heart became rapid and the pulse somewhat weak, but continued to beat regularly. Artificial respiration was resorted to; stimulants were given hypodermically; oxygen was administered, and breathing was finally resumed.

**Residua and Sequelae of Epidemic Encephalitis**—From about eighty postencephalitic cases, S. Philip Goodhart and Samuel Smith Cottrell, New York (Journal A. M. A., Jan. 3, 1925), have selected twenty-one of especial interest. A study of the static, kinetic and synergistic mechanisms affected in encephalitis and in such classified entities as chorea, dystonia musculorum, striatal syndromes, paralysis agitans and multiple sclerosis not only indicates that the damaged nerve centers are the same anatomically, but also suggests that the acute pathologic condition in the one case terminates in a histopathologic process which is the same in the chronic stages of encephalitis as in the conditions that obtain in the syndromes of older nomenclature. A review of histories and observations does not suggest a more or less constant relationship between the symptoms of the acute illness and the development later of a particular type of motor deformity; that is to say, the nature of the acute manifestations does not enable approach to definite judgment of the subsequent behavior. For example, the final static posture, with its reduction of psychophysical activity, may be preceded in the acute or subacute phase of the malady by a period in which the hyperkinetic mechanism produces an original posture with dominant choreiform or dystonic movements.

# NORTHWEST MEDICINE

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Oregon, Washington, Idaho and Montana

Devoted to the interests of the Medical Profession of the  
Pacific Northwest

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## EDITORIAL

### HEALTH EXAMINATIONS

From time to time the periodical health examination has been presented to the profession of the Northwest, by whom it has been received with interest and apparent commendation. With very few exceptions, however, it is probable that physicians on the whole have let it go at that and have not put the examination into actual operation. In various sections of the East this matter is being agitated as something of real value in the promotion of public health and an asset worth considering on the part of the individual physician. It is obvious that in a measure every such examination will bring him in closer contact with his patients and will help to attach them more securely to him. Let the family doctor make a complete examination of a patient, which may disclose some new ailment of which neither had previous knowledge, and subsequently the patient will seek periodic examinations with expectation of subsequent treatment for the disorder, thus promoting his own future welfare and increasing the present substance of his physician. So much publicity has been given to this procedure among the laity that in many localities they are seeking this sort of thorough examination, often to discover that physicians are not easy to find who are suitably prepared to satisfy their wishes. In order to fill this need, "life extension institutes" and similar organizations have been formed in some of the eastern states, which are making a business of providing these examinations, and are carrying on a propaganda to increase a demand for them. This means that lay organizations are thus aiming to take from the medical profession a line of service which is strictly their legitimate function.

It has been frequently mentioned of late in the discussion of this problem that one can scarcely expect physicians to take a warm interest in advocating these examinations on the part of their patients, unless they have had the same done for themselves. It may ensue, perchance, that a physician, smugly content in the belief of his own

well-being, may thus have disclosed an ailment of which he had no previous knowledge, and which ere long may prove a serious handicap unless checked in its incipiency. This is no idle dream but has been demonstrated in certain instances.

In order to develop an interest in this line of work on the part of its membership, some medical organizations have taken the matter in hand and have established methods for carrying out such procedure. For instance, the Pennsylvania State Medical Association, on the program for its next annual meeting, has made provision for health examinations of its members who desire to ascertain their real physical condition. Names of members who volunteer for this service and dates for the same for their fellow practitioners will be arranged to accommodate as many as possible. With an interest in the matter thus instituted it is probable that these physicians will recommend such examinations to their patients and, being able to offer example as well as precept, their word will be much more effective. In carrying out this work one must not be deceived with delusions as to its immediate remuneration. Manifestly one cannot charge a fee for this service commensurate with the work involved, for the necessary examination is not a cursory affair, being much more extensive and thorough than that employed by any life insurance examination, but one must expect results from the consequent interest and practice developed among his clientele. Suitable examination blanks for this purpose have been prepared at the A. M. A. headquarters in Chicago, where they may be obtained on application.

### AGE FOR RETIREMENT

At some time during the active period of life most men entertain the hope of retiring after a period of years and devoting subsequent years to rest and leisure, but few really attain this desired ambition. Of these a small proportion succeed in passing the time satisfactorily in attaining pleasure and recreation. A larger number settle down to a few years of inactivity, vegetation and demise from chronic disease, aggravated by too much food and too little exercise. This aspiration exists in the hearts of many physicians who claim to be wearied of years of practice and long for the time when the anxieties of medical life may be replaced by a period of ease and pleasure seeking. It seems superfluous to comment on the small number of us who attain that state of financial independence

which makes such a course feasible. Occasionally a physician decides that he will replace the practice of medicine by some form of business career. Commonly this venture results disastrously from lack of ability or unskillful investment of funds, and the deluded individual returns to his first love, the only one for which he is adapted.

The physician in good health and in possession of all his faculties who decides to retire from practice in consequence of having a competence on which to live, sooner or later meets disappointment and regrets. The case comes to my mind of a physician, long in practice, who was persuaded by his children to retire at the age of seventy, although in usual health and having no other reason for this course of procedure. After spending a year in family visits he attempted to lead a life of leisure and idleness. In a short time the folly of this course was manifest and he led a most unhappy and wearying existence until the time of sudden death. In contrast, the writer recurs to a recent visit to his native New England town, where one of his earliest boyhood recollections, over a half century passed, was associated with a doctor who had the world at his feet and was bound to conquer it. Now, at the ripe old age of eighty-five, he is still engaged in the regular practice of medicine, cheerful and optimistic as any of his town-folks. To be sure, night work is eliminated and cases are a matter of selection. Undoubtedly the old gentleman would have been dead long ago, if there had been an intentional termination of this long established routine of life. The age for retirement? If one has at heart the desire for longevity with contentment and satisfaction, let him plan to do some active work, useful to himself and others so long as he is spared on this earthly sphere. In the long run no form of activity will be as satisfactory as that to which one has become familiar through long years of association and practice.

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### PHYSICAL THERAPEUTICS

The traditional conservatism of the medical profession has always led its members to be chary of accepting new remedies and methods of treatment, unless first proven and standardized by recognized leaders. Such restrictions have not hedged about the irregulars and modern cultists. Accordingly, they have seized with avidity anything new in the treatment of human ailments. This very fact has further prejudiced physicians against some meth-

ods which have inherent beneficial qualities. These comments are applicable to those practitioners of the methods assembled under the head of physiotherapy, which have considerable vogue at present in many parts of the country. For more than a quarter of a century in various cities there have been groups or individual physicians who have industriously practiced the principles of electrotherapy with recognized results. But the very word electricity as applied to medical treatment has been so generally associated with quacks and charlatans that these legitimate procedures have been decried in the minds of most physicians. The results obtained in treating wounded soldiers in the great war, however, by the methods of electrotherapy and other physical measures, have established these forms of treatment under the recently adopted designation of physiotherapy and their continued employment is widely recognized.

In only a very few instances are these methods taught in the schools, and information regarding their applications have been assumed by manufacturing establishments, under whose auspices physicians and laymen have periodically visited cities east and west for the purpose of instructing any who treat the sick in the technic of their own particular forms of apparatus. These circumstances have had a tendency to prejudice the physician in the adoption of measures of this class. Obviously there is no restriction placed upon the propaganda of such promoters and one needs to employ his powers of observation and discretion to determine to what ailments these forms of therapy are applicable. These measures in no sense supplant the established principles of medical and surgical treatment. They do, however, supplement recognized forms of practice in a most useful and beneficial manner. In the study and adoption of these methods of practice one must aim to keep his feet on the ground and not lose his head in the clouds of romance and imagination. There is a useful future for the application of these physical methods and they are worthy of study and adoption.

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### OSTEOPATHY IN IDAHO

The Idaho osteopaths have introduced an Act before the legislature, styled "The Idaho Osteopathic Physicians and Surgeons Act." Among the many sections specifying the details of carrying out this Act is one relating to colleges of osteopathy, in which is presented a required attendance of thirty-six months before graduation. The number

of hours is specified for each subject. The last paragraph, however, states that the prescribed hours for any one subject may be reduced not more than 30 per cent. All osteopaths now practicing in the state will be licensed after appearing before the examining board and passing an examination in surgery, provided they present evidence of a year postgraduate course in surgery or a year's internship in a hospital of at least twenty-five beds. Another section provides for the right to act as health officers and to serve as heads of various county and city hospitals. They will also be permitted to treat their patients in all hospitals maintained by public taxes or public subscriptions. The evident purpose of this Act is to place osteopaths in every respect on the same basis and qualifications as regular physicians and surgeons. This proposition is presented as food for thought, not only on the part of the physicians of Idaho, but those in the other states reached by this journal.

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#### WASHINGTON MEDICAL LEGISLATION

The medical profession of Washington has an active interest in one measure introduced before the present session of the legislature. This act, sponsored by the Public Health League, is intended as a protection of the public against ignorant and poorly prepared practitioners. It provides for the examination at the University of Washington in a few fundamental subjects on the part of all those seeking to treat the sick, as a preliminary to an examination for license. It would seem as if any reasonable individual, having the welfare of the general public at heart, would approve of such a test as to the fundamental qualifications of those persons, to whom the future health of the citizens of the state are to be trusted. The only opponents to such examination are those who admittedly are unable to meet such a test. For further discussion of this interesting subject the reader is referred to its consideration under the heading, Public Health Leagues appearing on another page of this issue.

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#### CANADIAN DISPOSITION OF THE CULTS

The liberality today of the legislators of our states in legalizing all the modern cults, with their grotesque methods of treating human ailments, is in marked contrast to the action of our neighbors to the north of us. During the recent session of the British Columbia legislature, a bill was again presented calling for legalizing sanipractors to treat

the sick. In order that the legislature might be informed as to the principles by which this cult treats the afflicted, the following lucid definition was given of sanipractic:

"The sciences and art of applied prophylactic and therapeutic sanitation, a separate but coordinate system of methods based on nature-cure philosophy, which enables the physician to direct, advise, prescribe, or apply food, herbs, roots, barks, water, light, heat, exercise, passive and active, manipulation, adjusting tissue, vital organs, or anatomical structure by manual, mechanical, or electrical instruments or appliances, or other natural agency to assist nature restore a psychological and physiological interfunction for the purpose of maintaining a normal state of health in mind and body."

The Act provided that all of their kind in existence should be licensed without examination and subsequent applicants for license should be examined by a board of their own members. They demanded all the rights and privileges of physicians and that the Act in question should take precedence over all others in the Province relative to medical legislation. Representatives of medical bodies in the Province protested against entrusting the welfare and health of the citizens to uneducated practitioners, deficient in scientific knowledge, while medical practitioners are required to spend years in rigid preparation before being permitted to practice. The necessity of being grounded in fundamental sciences was emphasized and protest made that the one not so prepared should not be entrusted with the responsibilities carrying with them the issues of life and death. The bill was killed by the committee and thus ended one menace to the welfare of our Canadian brethren. This is an example worth the consideration and emulation of legislators of our states.

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#### PACIFIC NORTHWEST MEDICAL ASSOCIATION

The fourth annual meeting of this association will be held at Portland, June 29-July 1. The program for the meeting as far as arranged seems to indicate that the standard this year will be equal if not superior to any of its predecessors. The preliminary program as prepared to date is given below.

The meeting will be held at the Multnomah Hotel, where provision will be made for all general and special assemblies. An amplifier will be employed which will insure every visitor adequate opportunity to hear all words uttered by each speaker. The exhibition committee, of which Dr. Raymond Watkins is chairman, will prepare an exhibit in two sections. The commercial exhibit will present the

usual preparations and products of the manufacturers. The scientific exhibition will contain pathologic specimens from individuals and the medical school. Any practitioners, having interesting specimens which they wish to add to the exhibit, are requested to communicate with the chairman of the committee.

#### PRELIMINARY PROGRAM

Dr. Alan N. Drury, Lecturer at the University College Hospital, Medical School, London, England, will give two lectures for the general assembly, and two or three lectures that will be of special interest to those particularly interested in heart diseases. This will probably be arranged as a side meeting of internists.

Dr. G. N. Stewart, Professor of Experimental Medicine and Director of the H. K. Cushing Laboratory of Experimental Medicine, will present three lectures: (1) Physiology of the Suprarenal Glands, (2) Physiology of the Thyroids, (3) Physiology of the Islands of Langerhans.

Dr. Lewellys F. Barker, Professor of Medicine at Johns Hopkins, will present three lectures on internal medicine, subjects not yet announced.

Dr. James B. Herrick, Professor of Medicine, Rush Medical College, will give three lectures on the heart, the titles to be: (1) Diseases of the Coronary Artery, (2) Angina Pectoris, (3) Syphilis of Heart and Aorta.

Sir Henry M. W. Gray, Professor of Surgery, McGill University, Montreal, will give three lectures on surgery: (1) Developmental Abnormalities Affecting the Colon. Their far-reaching effects. Suggested treatment. (2) Acute Intestinal Obstruction, (3) Carcinoma Mammae.

Dr. Reginald Fitz, Associate Professor of Medicine, Harvard Medical School, will give two lectures: (1) Diabetic Coma, (2) The Importance of the Laboratory to the General Practitioner.

Dr. Henry W. Woltman, neuropathologist at the Mayo Clinic, will give two lectures: (1) A Clinical Pathologic Discussion of Changes Noted in the Nervous System in Pernicious Anemia, (2) Diseases of the Nervous System Associated with Pain, and their Relation to General Diagnosis.

Dr. Barney Brooks, Associate Professor at the Washington University, St. Louis, will give three lectures on surgery of the circulation of the extremities: (1) The Anatomic and Physiologic Pathologic Changes Associated with Diseases of the Circulation of the Extremities, (2) The Clinical Manifestations of Diseases of the Circulation of the Extremities and Methods of Diagnosis, (3) Methods of Treatment and Disorders of the Circulation of the Extremities.

In addition to these speakers, the Pacific Northwest Orthopedic Association will be organized, and will have with the Pacific Northwest Medical Association a joint speaker, Dr. Nathaniel Allison, Orthopedist to the Massachusetts General Hospital, who will give two lectures: (1) The Diagnosis of Knee Joint Diseases and Injuries, (2) The Diagnosis of Hip Joint Affections.

On the day following the meeting, July 2, the orthopedists will have a clinic at the Shrine Hospital for Crippled Children.

The North Pacific Pediatric Association will meet simultaneously with the Pacific Northwest Medical Association, and will have a joint speaker, Dr. McKim Merriott, of the Washington University, St. Louis, subject not yet announced.

It is expected that Dr. Wm. David Haggard, president-elect of the American Medical Association, will be present at the meeting. Dr. Haggard is one of the most prominent surgeons of the south,

## MEDICAL NOTES

**Interstate Postgraduate Clinic Tour** of American physicians will start from Chicago May 13 and will return from Europe June 28 or July 4. The itinerary provides for visiting clinics in Canada, British Isles and France. After attending clinics at Toronto and Montreal, the company will sail from the latter city May 23, arriving at Liverpool May 31. The leading hospitals in the cities of England, Scotland and Ireland will be visited, where clinics will be presented by the well known physicians and surgeons of those cities. Six days will be spent at the hospitals of Paris. Opportunity will be given for sight-seeing trips and provision will be made for many social functions under the auspices of distinguished medical and scientific citizens of the different countries visited. The cost from Chicago to Chicago will be from \$750 to \$990, according to accommodations. For further particulars address Dr. William B. Peck, managing director, Freeport, Ill.

**The Medical Officers' Reserve Corps** is receiving considerable attention at this time. The following information is offered concerning it. This corps is one section of the Officers' Reserve Corps, a personnel reservoir from which the medical section of the organized reserve draws its material for the formation of definite medical department units on an inactive peace time status. It is the medical profession's tangible personal contribution to the Federal Government's national defense plans under the Act of Congress of June 4, 1920. It represents a patriotic potentiality, to which each member contributes and whose voluntary enrollment places him on record with the War Department and before the public as a backer of the National Defense Act. In time of peace a man at the time of his appointment must be a citizen of the United States, between ages of 21 and 60. Provisions are made for the appointment of applicants who were and who were not commissioned during the World War service.

Some of the personal advantages suggested are that one puts something definite and personal into the National Defense Act, and experiences the satisfaction of having rendered a constructive patriotic service. The professional advantage of being known in the community as being in the Reserve is undoubtedly a self-interest asset. It is of advantage to the Government to have a dependable, classified and located personnel for national emergency which this represents, a substantial asset in preparation against war and a definite peace insurance. Further information regarding enrollment can be obtained from Headquarters 96th Division, 323 New Post Office Building, Portland, Oregon.

**American Association for Medical Progress.** This is a National lay organization incorporated in Boston, in 1923, for the purpose of disseminating medical knowledge to the public. Its promoters are distinguished members of the medical profession, scientists and legislators. During the past year over

72,000 publications dealing with various phases of animal experimentation, vaccination, etc., were distributed. A greater number of similar publications is planned for the current year. A lecture program will be developed and attention will be focused on the formation of branch organizations throughout the country.

**The American Congress on Internal Medicine** will hold its ninth annual clinical session at Washington, D. C., March 9-14. The clinicians and investigators of Washington will devote the entire session to group clinics, ward rounds, laboratory conferences, lectures, demonstrations and exhibitions of scientific collections. This will be a useful and memorable week. All practitioners and laboratory workers are invited to take advantage of the opportunities afforded by this session.

### OREGON

**Annual Meeting at Medford.** The annual meeting of the State Medical Society at Medford, which has been announced for May, has been deferred to Sept. 2-4. In view of the meeting in Portland in June, when a three-days' session will feature men from abroad, the program for this state meeting will be confined to home talent, except for the presence of Dr. C. A. Hamann, of Cleveland.

**Portland As a Medical Center.** Dr. Frank Smithies, of the Department of Medicine of the University of Illinois, was a guest of the Portland Academy of Medicine at a meeting held Jan. 7. He especially commended the work of the University of Oregon Medical School, and expressed the belief that Portland would become the medical center of the Pacific Coast. Medical men from all parts of the state were in attendance at this meeting, which was said to be the largest ever held under the auspices of the Academy of Medicine. Dr. Smithies delivered a lecture embodying the results of more than ten years research of pernicious anemia.

**Board of Health Officers.** At the annual meeting of the State Board of Health, held at Portland, Jan. 14, the following officers were elected for the ensuing year: President, Dr. C. M. Barbee, Portland; vice-president, W. F. Phy, Hot Lake; secretary and state health officer, Dr. F. D. Stricker, Portland. Action was taken providing against bubonic plague by the eradication of rats, and requiring rat-proof construction where foodstuffs are held in storage. It was resolved that building regulations should provide for venting of gas stoves and other heating appliances connected with gas. This action resulted from several deaths in Portland from carbon monoxide poisoning.

**War on Botulism.** Representatives of the state boards of health of Oregon, Washington and California met with the Northwest Cannery Association at Portland Jan. 8. It is proposed to standardize manufacturing and canning processes to eliminate the danger of botulism poisoning. Legislation was considered in the three states mentioned for the purpose of accomplishing this end.

**New Hospital Requested.** The report of the rehabilitation committee of the American Legion requests the construction of a new Veterans' Hospital at Portland. At present a building is leased from private parties which is unsuitable. It is desired to build a modern 150-bed hospital in place of this. A ten-acre tract, owned by the city, adjacent to the University of Oregon Medical School, has been offered to the government for this purpose.

**Appointed to Veterans' Bureau.** Dr. L. E. Briscoe, who has been at the head of the county health unit of Clackamas County for the past year, has resigned. He will take the position of medical officer in charge of the U. S. Veteran's Bureau in the Woodlark Building, Portland, which position he held for three years previous to his county health work.

**Officer Transferred.** Dr. F. N. Gordon, who has been superintendent of the U. S. Hospital, No. 77, at Portland, has been transferred to hospital No. 48 at Atlanta, Ga. He will be succeeded by Dr. B. W. Swackhammer of Boise, Ida.

**Discussion of Preventive Methods.** At a meeting of the Social Workers Association held at Portland Jan. 7, Dr. Karl F. Meyers, of the University of California, discussed measures of preventive medicine from the standpoint of public health work. The progress of the toxin-antitoxin treatment for diphtheria and the immunization treatment for scarlet fever were especially considered.

**Appointed Health Officer.** Dr. F. M. Wallace, of Oregon City, has been appointed county health officer for Clackamas county by the country court, to fill the vacancy due to the resignation of Dr. L. E. Briscoe, who held this position in 1924.

**Appointed Health Officer.** Dr. A. L. Richardson of LaGrande was last month appointed health officer of that city in place of Dr. E. G. Kirby, resigned, who has held the position for a number of years.

**Physician Injured.** Dr. H. K. Stockwell, Salem, received a badly fractured arm Jan. 2, when his automobile overturned and plunged down a thirty-foot embankment.

**Dr. D. P. Crowell**, who has practiced at LaCrosse, Wis., for the past three years, has located for practice at Albany.

**Dr. D. H. Osborn** has located for practice at Marshfield. He has recently pursued several studies in New York and Chicago.

**Physicians Licensed to Practice.** The license department at Olympia last month issued licenses to practice to the following 23 physicians by reciprocity: W. B. Braden, W. R. Brady, E. O. Hanso.1. M. S. Jared, H. L. Jones, H. Odland, J. E. Royer, Seattle; D. H. Running, E. C. Yoder, Tacoma; F. Dwyer, Sedro Woolley; E. E. Gertzladd, Priest River, Idaho; R. C. Gale, Hermiston, Ore.; E. W. Hor-i-will, Orofino, Idaho; W. A. Hulbrush, Great Falls, Mont.; A. E. McMillan, Stevens Point, Wis.; A. F. Morrison, Port Townsend; J. R. Numbers, Boise, Idaho; G. A. Ross, Eugene, Ore.; O. F. Shipman, Los

Angeles; J. E. Toothaker, Centralia; J. A. Vance, Ontario, Calif.; S. E. Wilson, Ryderwood, Wash.; C. M. Wilson, Olympia.

The following physicians were licensed by examination: G. N. Belyea, Pasadena, Calif.; J. V. de Leon, Port Townsend; J. S. Arnason, Seattle; K. W. Amano, Tacoma.

**County Hospital to be Built.** Work will soon begin on the new county hospital at Monroe, which will cost about \$100,000.

**Decrease of Death Rate.** In the registration area of the United States for 1923, including 87.6 per cent of the population, there was a death rate of 12.3 per 100,000 population, as compared with 11.3 for 1922. Half of this increase is attributed to influenza and all forms of pneumonia. In the state of Washington, however, the death rate for 1923 was a decrease from 1922, being 9.25 per 100,000 population. During the first six months of 1924 there was an increase in this state of 1.06 per 100,000 attributed to increase of death from measles, cancer and automobile accidents.

**Hospital Plans Considered.** Plans are under consideration for the construction of a hospital in connection with the county farm near Yakima. It is proposed to begin construction at once and that the institution will care for all of the county's hospital cases which are now treated at the hospitals of the city.

**Walla Walla General Hospital** will be a modern, fire-proof, up-to-date institution with complete equipment and departments. It will be located on a block covering three acres. It is to be constructed to accommodate from 50 to 60 patients. It will be a sanitarium as well as a hospital. Construction will begin very soon.

**Hospital Purchased.** Drs. R. L. Clark and D. H. Lewis of Spokane have purchased the hospital at Spirit Lake. This is provided with 10 rooms and is well supplied with modern equipment and apparatus.

**Increase of Beds Recommended.** The report of the rehabilitation committee of the American Legion recommends an increase in hospital beds as follows: Beds in U. S. Veterans' Hospital No. 85, Walla Walla, to be increased from 207 to 288; an increase at American Lake Veterans' Hospital of 200 beds for neurotic patients, and 140 beds for psychopathic patients.

**Joins Veterans' Hospital.** Dr. Elmer Smythe of Seattle has been attached to the medical staff of the U. S. Veterans Hospital No. 59 (Cushman), Tacoma. He was formerly connected with the veterans' bureau at Portland.

**Visit of Dr. Adson.** Dr. Alfred W. Adson of the Mayo Clinic was the guest of the Seattle Surgical Society Jan. 8 and 9. He held clinics at several of the hospitals and gave addresses on the surgical treatment for spastic paralysis, introduced by Dr. Hunter of Australia, and also discussed the treat-

ment of injuries of the skull and spinal column. The meetings while he was present were attended by physicians of various cities of Washington as well as Portland. This was the largest and most successful meeting in the history of the Seattle Surgical Society.

**In Charge of Quarantine Regulations.** Dr. J. H. Coffin of Longview, city physician, was last month placed in charge of quarantine regulations, following several weeks of scarlet fever. This action resulted from a conference of county and adjacent city health officers. Schools were not to be closed but quarantine was ordered established as noted.

**Doctors Exonerated.** Quite a tempest was recently stirred up concerning doctors and other officials at Mountain View Sanitarium, near Tacoma, on account of charges of cruelty to some of the pupil inmates, the complainants being parents. The investigation on the part of the county commissioners resulted in exoneration from wrong doing on the part of physicians or teachers.

**Library Moved.** The medical library at Seattle has been moved to new quarters in the Stimson Building, which are provided through the courtesy of the Metropolitan Building Company. These accommodations are very superior in location and floor area to anything hitherto occupied by the library. There is a separate reading room with ample space for all readers, besides the main room, containing book stacks which will meet the growth for a long future period.

**Meeting of Bacteriologists.** The Seattle branch of the American Association of Bacteriologists held a meeting Jan. 10. Dr. Karl F. Meyer of the Hooper Foundation for medical research, San Francisco, discussed various forms of bacteria and their relations to human diseases.

**Appointed Health Officer.** Dr. J. M. Bammert has been appointed health officer for South Bend by the mayor of that city.

**Commissioned in Medical Reserve.** Congressman John W. Summers, of Walla Walla, has been commissioned lieutenant-colonel in the medical reserve corps. This is a promotion from the grade of major, which he has held for five years.

**Appointed Colonel.** Dr. Alexander H. Peacock has been promoted in the Reserve Medical Corps, U. S. A., from lieutenant colonel to colonel. During the war he served with the Expeditionary Forces in France.

**Dr. J. E. Preucel,** who has practiced for some time at St. John, has located for practice at Colfax.

**Dr. Shelby Jared** has located for practice in Seattle, coming from Chicago, where he recently completed his medical and hospital work.

**Medical Wedding.** Dr. C. F. Davidson of Seattle was married to Miss Lucy Wallrich of Shawano, Wis., Dec. 27.

## IDAHO

**Hospital Standardization Under Discussion.** There has been much discussion recently at Twin Falls relative to standardizing the county hospital. The physicians of the county were united in insisting upon the hospital being standardized according to accepted professional principles. One of the county commissioners, supported by an osteopath, opposed this procedure, claiming that its cost of management would be thereby increased and that some certain practitioners would be discriminated against. The county commissioners by vote of two to one adopted the proposed standardization requirements.

**Physician Transferred.** Dr. B. W. Shawkhammer of the veterans hospital at Boise has been transferred to take charge of Veterans Hospital No. 77 at Portland.

**Dr. E. A. Munoz** has been appointed to Veterans Hospital No. 52 at Boise. He has previously been on duty at Veterans Hospital No. 55 at Walla Walla, Wash.

**Dr. L. P. McCalla**, who has practiced for many years at Boise, and has long been known as one of the leading surgeons of the state, has moved to Bellingham, Wash., where he will establish himself for practice.

**Dr. G. H. Wahle** has located for practice at Boise. He recently completed a postgraduate course of study at Rochester, Minn.

**Dr. S. A. Swayne**, who has practiced for the past five years at Melba, has located for practice at Nampa.

**Dr. Virgil Belknap**, formerly of Prairie City, has moved to Boise, where he will continue to practice.

**Appointed to Sanitarium.** Dr. Ellis Kackley of Pocatello has been appointed surgeon in charge of the new municipal sanitarium which is being built in that city. It is expected the institution will soon be completed.

## MONTANA

**New Hospital Under Construction.** The Protestant Hospital at Livingston has been partially built at an expense of \$105,000. Recently a drive was carried on to raise an additional \$60,000 for its completion, which is looked for in the spring.

**Appointed to Board of Health.** Dr. G. M. Jennings of Missoula has been appointed to the state board of health, to hold office until 1929. He succeeded Dr. J. A. Donohue of Butte.

**Appointed to Board of Medical Examiners.** Dr. J. A. Donovan of Butte has been appointed to the state board of medical examiners for the term ending March 2, 1931. He succeeds Dr. J. H. Judd of Bozeman.

**Typhoid Fever Rate is Lower.** In 1922 Montana reported 22 deaths from typhoid fever, being a rate of 3.7 per 100,000 population. In 1923 there were 18 deaths, being a rate of 3.2. During 1924 the rate was reduced to 1.8. This reduction of death rate

is striking when one considers the record of 1910 which was 39.9. The health authorities of the state are to be congratulated on such a record.

## OBITUARIES

**Dr. Austin G. Byrd** of Emmett, Ida., died in a Boise hospital Dec. 17 from a complication of diseases from which he had suffered for several years. He was born in 1884. He served in France during the war with Idaho troops, among whom he was widely known and regarded with affection.

**Dr. R. H. Harrison** of Tacoma, Wash., died at Crocker Lake in the Hood Canal district Dec. 30 from pneumonia. He was born in Ireland in 1858. He came to America, locating at Grays Harbor in 1890. He practiced for the past twenty-seven years in Tacoma. At one time was Pierce County health officer.

**Dr. Sanford Whiting** of Portland, Ore., dropped dead in his office Dec. 23 from disease of the heart. He was 55 years of age, born at Taylor's Falls, Minn. He located in Portland more than twenty-five years ago. He was prominent in club and fraternal circles. He served in the Philippines as captain during the Spanish American War and during the World War served overseas with the rank of major. He served part of a term in the city council.

**Dr. Henry Essig**, formerly of Spokane, Wash., died at New York City Jan. 11, at age of 78. He came to Spokane 35 years ago and practiced there for 15 years, after which he lived on a ranch near Davenport. Two years ago he went to New York. He was a brother of Dr. Fred Essig.

**Dr. J. H. Dumon** of Centralia, Wash., died Dec. 24. He was one of the pioneer physicians in that city and had a wide circle of friends by whom he was held in high esteem.

**Dr. Joseph S. LePard** of Potlatch, Ida., died Dec. 17 at 61 years of age. He was well known and had many friends throughout Latah County.

## REPORTS OF SOCIETY MEETINGS

## OREGON

## CENTRAL WILLAMETTE MEDICAL SOCIETY

Pres., W. B. Neal; Sec'y, S. S. Beardsley

A regular meeting of Central Willamette Medical Association, composed of physicians from Lane, Lincoln, Linn and Benton Counties, was held at Eugene July 22.

Dr. H. T. Buckner of Seattle delivered an address on "Fractures of the Femur." Discussion was led by Dr. E. L. Zimmerman of Eugene.

Dr. Harold Bean of Portland gave a talk on "Medical Emergencies of Surgical Practice As Viewed by the Internist." Discussion was led by Dr. Tartar of Corvallis.

## COOS-CURRY COUNTIES SOCIETY

Pres., Everett Mungus; Sec'y, H. M. Peery

Coos-Curry Counties Medical Society held its annual meeting at Marshfield Dec. 10. The fol-

lowing officers were elected for the ensuing year: President, G. E. Dick, Marshfield; vice-president, G. L. Low, Marshfield; secretary-treasurer, J. I. Merschon, Marshfield.

#### LANE COUNTY MEDICAL SOCIETY

Pres., W. H. Dale; Sec'y, E. L. Zimmerman

Lane County Medical Society held its annual meeting at Eugene Dec. 18. Dr. S. C. Slocum of Portland delivered an illustrated lecture on "Pains of the Lower Back." Prof. F. S. Dunn of the University of Oregon discussed the subject, "Phallic Worship."

The following officers were elected for the ensuing year: President, N. G. Nelson, Eugene; vice-president, F. E. Adams, Eugene; secretary-treasurer, L. S. Kent, Eugene; board of censors, G. S. Beardsey, Eugene.

#### WASHINGTON

##### KING COUNTY MEDICAL SOCIETY

Pres., F. H. Maxson; Sec'y, C. E. Watts

The General Meeting of King County Medical Society, Seattle, Wash., was called to order at 8:15 p. m., Jan. 5, 1925, at Masonic Club Rooms by President Maxson. There were 174 members present. The minutes of Dec. 1 were read and approved.

Dr. Stobie presented the report of the Membership Committee. It was voted that the report be accepted and placed on file.

The report of the Entertainment Committee was not presented, Dr. Black being out of the city.

Dr. Willis reported that the Press and Public Information Committee had very little to report, the work being taken care of by the Public Health League.

The Legislation Committee, Dr. Frederick Parker, chairman, reported that there had been no activities of the committee.

Dr. D. C. Hall reported for the Goiter Prevention Committee. It was moved and carried that the report be accepted and placed on file.

Dr. Walter Kelton reported for the Program Committee. The report was accepted and placed on file.

The Committee on the University Postgraduate Lecture Course, Dr. D. C. Hall, secretary, reported. It was moved and carried that the report be accepted and placed on file.

Dr. L. F. Lundy read the financial report of the Industrial Service Bureau, and Emergency Telephone Exchange.

Dr. H. J. Davidson presented a resume of the status of the Industrial Service Bureau. It was voted that the report be accepted and placed on file. Dr. J. H. Snively asked what disadvantages surrounded dropping the Bureau, and what value the Bureau has at present. Dr. Davidson referred further to his report with elaboration. He moved that the incoming Board of Trustees be empowered to appoint a committee to investigate ways and means of terminating the Industrial Service Bureau contract, and to take such steps as may be found necessary to

negotiate such action. The motion was seconded and carried.

A list of members delinquent in 1924 dues was read.

The Treasurer's report was read and accepted by vote.

Dr. W. W. Bell made a financial report of the Bulletin. The report was accepted and placed on file.

Dr. George Swift reported for the Committee on the County-City Hospital. Mr. John Graham presented tentative plans for such a hospital and showed architect's drawings. It was moved that the report of the committee be adopted.

The report of the Credit Bureau Committee was accepted.

Applications for membership of Drs. A. B. Hepler, I. M. Cohn, and F. L. Ankrum were read.

The following officers were elected for the ensuing year: President, A. C. Crookall; vice-president, L. J. Palmer; secretary-treasurer, C. E. Watts; trustees, R. J. McCurdy, H. J. Davidson; delegates to the Washington State Medical Association Meeting, G. W. Swift, J. B. Eagleson, F. T. Maxson, D. H. Houston, C. E. Hagyard, A. O. Loe, M. G. Sturgis, and W. H. Anderson.

A regular meeting of the Medical Section of King County Medical was held at Seattle Jan. 19. Drs. Fred L. Ankrum, I. M. Cohn and A. B. Hepler were elected to membership.

#### PROGRAM

Dr. Philipp Schonwald gave a preliminary report and demonstration on the Prognostic value of the Urochromagen Reaction in Pulmonary Tuberculosis. He gave statistics on a series of 213 cases observed at Firland Sanitarium.

Dr. John Blackford read a paper on "The Early Diagnosis of Gastric Carcinoma," with personal observations drawn from a series of several hundred cases of upper abdominal pathology.

Dr. Hagyard spoke of the seasonal periodicity of symptoms in ulcer as being of considerable differential value, as was the occurrence of blood in the gastric contents and stool.

Dr. Hunter stressed the point that in differential diagnosis between ulcer and cancer, where accurate medical management is carried out, bleeding that persists in the stool after five to seven days is suggestive of neoplasm.

Dr. Dowling felt that the incidence of gall-bladder disease as shown by the statistics given was probably too low. He also stated that the Wassermann test was of little value.

#### PIERCE COUNTY MEDICAL SOCIETY

Pres., S. M. MacLean; Sec'y, W. B. Penney

Pierce County Medical Society held its annual meeting in Tacoma Dec. 27. The following officers were elected for the ensuing year: President, W. B. McCreery; vice-president, E. F. Dodds; secretary-treasurer, W. B. Penny; trustees, C. D. Hunter, C. R. McCreery, H. T. Argue, H. G. Willard and Wil-

liam Ludwig. Delegates to the state medical association: H. G. Willard, W. B. Penney and W. B. Janes.

The regular meeting of the Pierce County Medical Society was held in its rooms, Tacoma Wash., Jan. 13, 1925, called to order by the retiring president, Dr. S. M. MacLean. Dr. W. B. McCreery, the newly elected president, was called to the chair and installed.

Minutes of the previous meeting read and approved. Dr. Whitacre described the two measures to be presented at this session of the legislature and urged all members to be ready to help if called upon.

The scientific program consisted of a paper by Dr. Henry Odlund, of Seattle, on "The Cutaneous Lesions of Acquired Syphilis," illustrated by a collection of slides, showing varied forms of early and late lesions. A general discussion by many members followed.

It was voted that the annual subscription for Hygeia for use in the public library be renewed, and such others as the trustees might recommend.

Dr. E. A. Layton was unanimously elected to the membership.

Several visitors from the United States Veterans Hospital and Camp Lewis were present.

#### SKAGIT COUNTY MEDICAL SOCIETY

Pres., A. B. Cook; Sec'y, Llewellyn Cook

Skagit County Medical Society held a meeting at Burlington, Wash., Jan. 15. Dr. C. C. Tiffin of Seattle read a paper on the treatment of goiter.

The following officers were elected for the ensuing year: President, R. W. McKinley, Burlington; secretary, S. W. Holton, Sedro-Woolley.

#### SPOKANE COUNTY MEDICAL SOCIETY

Pres., C. E. Butts; Sec'y, G. H. Anderson

The regular annual meeting of Spokane County Medical Society, Spokane, Wash., was held Thursday, Jan. 8, 1925, at 8 p. m., in the assembly room, Old National Bank Building. Minutes of the previous meeting were read and approved.

The following officers were unanimously elected for the ensuing year: G. A. Downs, president; R. N. Hamblen, vice-president; R. L. Rotchford, secretary; Mitchell Langworthy, treasurer.

The following were elected on the Board of Censors: A. E. Stuht, for three years; Charles E. Butts, for two years, and Peter Reid, for one year.

W. J. Pennock, E. S. Jennings, and G. H. Anderson were elected on the Executive Committee.

The following delegates were elected to the state convention: P. D. McCornack, C. E. Butts, A. E. Stuht, and P. J. Gallagher. Alternates: J. G. Cunningham, F. Hoag, Armin Fischer, and H. E. Rhodehamel.

The President appointed Drs. Rhodehamel, Farley and Burger to audit the books of the treasurer.

There being no further business to come before the society, the meeting adjourned.

The regular meeting of the Spokane County Medical Society was held Thursday, Jan. 22, 1925, at 8 o'clock p. m., at St. Luke's Hospital. Minutes of the previous meeting were read and approved.

Executive Committee reported favorably on the names of Drs. J. N. McCoy, Roscoe Clark, C. A. Veasey, Jr., and G. G. Espe, whose names were submitted to the society for consideration at the next regular meeting.

#### PROGRAM

Dr. Eikenbary presented the following cases: (1) Treatment of a compound fracture of tibia complicated by gas gangrene; (2) Treatment of deformities in an old case of anterior poliomyelitis; (3) The treatment of paralysis in a recent case of anterior poliomyelitis to prevent deformities. Cases were discussed by Dr. Mitchell Langworthy.

Dr. Veasey gave a few remarks concerning the problems met with in a case of a diphtheria carrier. Discussed by Dr. John T. Bird.

Dr. A. A. Matthews presented a case of Paget's disease of the bones. Discussed by Drs. C. N. Suttner and F. Herpel.

Dr. Bird presented a case to show the problems met with in diagnosing a right-sided abdominal tumor. Discussed by Drs. A. A. Matthews and F. Herpel.

Dr. Stier gave a surgical and autopsy report on a case of adenosarcoma of the kidney.

Under the head of new business a motion was carried that the Executive Committee take under consideration a method for obtaining the removal of the names of chiropractors, osteopaths and other drugless healers from the listing of physicians and surgeons in the phone directory in the future.

#### WHATCOM COUNTY MEDICAL SOCIETY

Pres., W. W. Ballaine; Sec'y, A. M. Dawson

Whatcom County Medical Society held a meeting at St. Joseph's Hospital, Bellingham, Wash., Jan. 5.

The following officers were elected for the ensuing year. President, L. R. Markley, Bellingham; first vice-president, O. E. Beebe, Bellingham; second vice-president, C. S. Hood, Ferndale; third vice-president, E. S. Clark, Sumas; secretary, A. M. Dawson, Bellingham; treasurer, A. W. Stimpson, Bellingham.

#### PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

Pres., J. T. Dowling; Sec'y, M. J. Morris

The annual dinner and election of officers of the Academy of Ophthalmology and Otolaryngology was held at the University Club, Seattle, Wash., Jan. 20, 1925. The President, Dr. J. T. Dowling, presided, and twenty-two members were present.

Following the dinner, Mr. France was presented to the meeting, and demonstrated the Brayco projection lantern, explaining its usefulness to the medical profession.

Dr. Dowling, the retiring president, gave a resume of the events in the Academy during his term as president. The treasurer's report was read, and an auditing committee, consisting of Drs. W. O. Bell and Conner Gray, was appointed.

Drs. Robert Wightman, L. L. McCoy and Manford Waltz were elected to membership.

It was moved by Dr. H. Stillson that a vote of thanks be accorded the Northwest Medicine for their devotion of the last issue to articles on eye, ear, nose and throat work. Seconded and passed. The president instructed the secretary to send this communication.

The following officers were elected for the ensuing year: President, J. S. Davies, Tacoma; first vice-president, C. W. Shannon, Seattle; second vice-president, S. S. Howe, Bellingham; secretary-treasurer, M. J. Morris, Seattle.

A regular meeting of Lane County Medical Society was held at Eugene, Jan. 15. After dinner a clinic was held.

The following papers were read: "Cancer Control Movement, Clinical Cases Treated by Radium," by Dr. W. H. Dale; "Clinical Cases of Aneurism," by Dr. R. P. Mortensen; "Certain Phases of Pre- and Postoperative Surgical Treatment in Abdominal Cases," by Dr. F. M. Day.

#### IDAHO

##### NEZ PERCE COUNTY MEDICAL SOCIETY

Pres., P. W. Johnson; Sec'y, W. O. Clark

The regular meeting of the Nez Perce Society was held at Lewiston, Ida., Jan. 8. There was a large attendance of the members.

Dr. C. C. Tiffin of Seattle read a paper on goiter and demonstrated thyroidectomy under local anesthesia.

The following officers were elected for the ensuing year: President, J. W. Keck, Lapwai; vice-president, S. A. Roe, Lewiston; secretary-treasurer, J. H. Crampton, Lewiston.

##### POCATELLO MEDICAL SOCIETY

Pres., T. F. Miller; Sec'y, C. H. Sprague

Pocatello Medical Society held a meeting at Pocatello, Idaho, Dec. 26.

The following officers were elected for the ensuing year: President, W. W. Brothers; vice-president, F. M. Sprague; secretary, Harold Hugart.

##### SOUTH IDAHO DISTRICT MEDICAL SOCIETY

Pres., S. M. Waterhouse; Secy., F. W. Almond

The South Idaho District Medical Society held its semiannual meeting at Boise, Jan. 23, at the Elks' Club, where dinner was served. Several members of the legislature were present.

The name of the society was changed to Southwest Idaho Medical Association. It will include the following counties: Ada, Adams, Boise, Elmore, Gem, Auryhee, Payette and Washington.

The following officers were elected for the ensuing year: President, Dr. H. W. Stone, Boise; vice-president, O. H. Parker, Boise; secretary-treasurer, B. W. Mather, Boise.

## PUBLIC HEALTH LEAGUES

### WASHINGTON

Following a recommendation of Governor Hartley, the nineteenth session of the Washington Legislature will come to a close early in February, and its activities will be concerned in administrative measures exclusively. No private bills will be considered at this session. Those that have been introduced must be again presented at a special session of the Legislature, which will be called by the Governor to meet at Olympia some time in November. Therefore, all health legislation can not be acted on until next fall.

#### LEAGUE PRESENTS BASIC SCIENCE BILL

The Public Health League of Washington presented to the Senate Committee on Medicine, Surgery, Dentistry and Pure Drugs a measure, calling for a uniform fundamental examination in the basic sciences of healing, to-wit, anatomy, physiology, pathology, chemistry and hygiene. This examination to be held at the University of Washington and to be conducted by a committee of faculty members, appointed by the president of the university.

The necessity of an examination in these fundamentals by the terms of the measure is waived, where the applicant can present a certificate from any institution where the faculty committee believes that he has been successfully instructed and examined in the subjects enumerated. This measure reaches the four classes of licentiates in the state: Medicine, osteopathy, chiropractic and drugless healing.

#### COMMITTEE ACTS FAVORABLY

The Senate Committee on Medicine, Surgery, Dentistry and Pure Drugs, after a hearing held in the Senate chamber on the evening of Jan. 21, by a vote of five to two endorsed the measure. One of the senators who voted on roll call against the measure has since indicated his purpose of supporting it. Senator Conner, of King County, not only voted "No" on roll call, but gave notice on the floor of the Senate of submitting a minority report.

#### CHIROPRACTORS PROTEST

At the public hearing three chiropractors were present and offered their protests to this measure, claiming that members of their own cult could not pass, and also that it would involve too much medical influence in examinations conducted for cultists.

#### LEAGUE OFFICIALS SPEAK

Dr. H. J. Whitacre, of Tacoma, a member of the Executive Committee of the League, and former president of the organization, made a telling talk in favor of the measure. He outlined the general progress of medicine and spoke of the necessity of at least a fundamental training before anyone should be permitted to practice healing.

Dr. H. W. Partlow, of Olympia, another officer of the League, cited cases where barbers and blacksmiths and others had been granted licenses under

the present drugless healers act, and are calling themselves "Doctor" and conducting general practice, though they have had no training for such a responsibility.

The Executive Secretary of the League, Mr. Robert O. Jones, advised the committee that this was an effort to raise healing standards, and to protect the public. He said that it involved one of the most important things which could be undertaken by a Legislature, and that any cult or organization unwilling to raise its standards or to submit to an honest and fair examination could be looked upon with some suspicion.

#### BILL TO BE REINTRODUCED

While Senate Bill 35, which represents a majority report from the Senate Committee on Medicine, Surgery, Dentistry and Pure Drugs, can not be pressed further at this session, yet it can be reintroduced and can be placed before the Senate for a vote early at the special session. It is believed that it will be received favorably on the floor of the Senate and the House at that time.

## BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

**Basal Metabolism in Health and Disease.** By Eugene F. DuBois, Medical Director, Sage Institute of Pathology; Associate Professor of Medicine, Cornell University Medical College. 372 pp., 79 engravings, cloth, \$4.75. Lea and Febiger, Philadelphia and New York, 1924.

This excellent and authoritative work is written for the use of clinicians, medical students, physiologists and dietitians. The writer begins with a historical review of the subject, and the work done by the great pioneers, and then considers the general principles of physics, physiology and chemistry involved in metabolism. Next the principles of respiration apparatus and methods of calculation are discussed. DuBois favors the Benedict-Collins or Benedict-Roth apparatus as the best for hospital use.

He offers some very practical advice in the estimation of basic metabolism. Many normal controls should be studied after testing the machine for leaks. The duplicates should be studied and the work continued until they agree within 5 per cent. The most unpardonable sin is that of the doctor who judges his apparatus by its results checking up with his clinical diagnosis. Two or three actual measurements of basal metabolism should be made on each patient and, if they do not agree, others must be made. The author warns against ignoring poor technic and says any clinician has a right to ask to see the list of normal controls studied on an apparatus. And, if the technician raises any objection, something is rotten in the state of Denmark.

Part II is devoted to metabolism in diseases, as under and overnutrition, obesity, diabetes, disorders of the endocrines, diseases of the heart, kidneys and blood, fever, nervous troubles; and finally to water metabolism and the effects of drugs on metabolism.

The discussion of the causes of obesity is most

illuminating in reference to metabolism. The marvelous precision by which metabolic processes permit a man to remain at a given weight for twenty years under all sorts of circumstances and variations in diet is noted. Especially when it is shown that by the addition of one small pat of butter daily, in excess of the necessary calories, another individual might have doubled in weight. This amount of butter furnishes enough energy for one to walk one and a third miles. Hence it is concluded the fat man took one pat of butter too much, or walked one and a third miles too few, each day. This book, written by an able practitioner as well as a skillful investigator, is equally interesting and valuable both from a scientific and clinical standpoint. We commend it highly.

WINSLOW.

**Dental Infections Oral and Systemic.** (Vol. I.) Being a Contribution to Pathology of Dental Infections, Focal Infections and Degenerative Diseases.

**Dental Infections and the Degenerative Diseases.** (Vol. II.) Being a Contribution to the Pathology of Functional and Degenerative Organ and Tissue Lesions. By Weston A. Price, D.D.S., M.S., F.A.C.D., Specialist in Dental Research and the Diagnosis, Prognosis and Treatment of Dental Infections, etc. Vol. I, 673 pp., the Experimental Basis for Vol. II, presents Researches on Fundamentals of Oral and Systemic Expressions of Dental Infections. Vol. II, 471 pp., the Clinical Aspect of Vol. I, presents Researches on Clinical Expressions of Dental Infections. From the Author's Private Research Laboratories, Cleveland, Ohio. The Penton Publishing Company, Cleveland.

These volumes present a wealth of information on the subject of dental infections which is unsurpassed in any other publication. They are a beautiful exposition of the publisher's art, replete with superlative illustrations, several of the most striking being colored full page plates. The author states his purpose is to present new data and important new interpretations suggested by them, based on the fact that dental infections have been demonstrated to be an important contributing factor in the production of degenerative diseases. His experiments have demonstrated that in strains of the streptococcus group which may chance to get into a given environment will tend to produce the same unit characteristics and these, because of the great adaptability of these organisms, will be the resultant of the pabulum furnished by the host as a culture medium for the strains involved.

Vol. I contains a mine of information regarding dental caries and its relation to pulp infections and systemic disturbances. The facts enumerated are substantiated by many experiments on animals which are correlated with human disease. Relative to localization and organ defense, the author concludes that we have not as yet sufficient information to draw a close distinction between the influences of the organisms on the affected organ, in contradistinction to the influences of the diseased organ upon the organisms in the focus. Available data, however, strongly suggests that both these condi-

# THE PORTLAND MEDICAL HOSPITAL

PORTLAND, OREGON



A private medical hospital, especially equipped for gastro-intestinal, metabolic and cardiovascular diseases

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tions exist, either one acting entirely alone or both existing at the same time. An interesting chapter is devoted to the nature of sensitization reactions relative to the question of dental infections producing sensitization of an anaphylactic character. Experiments reveal that the teeth contain substances to which the individual may become sensitized and which in addition may have strong toxic properties. The anaphylactic sensitization which may thus be produced will disappear with the removal of dental infections. The question is considered whether a dental granuloma is a pus sac and its size a measure of the infection and danger. In reality this is a defense membrane and not a neoplasm, being Nature's mechanism for protecting the individual by destroying the organisms and toxins at every source. Chapters demonstrating these immediate relationships. This volume is crowded with the discussion of many problems of this nature.

Vol. II is devoted to the application of the principles already enunciated to diseases of various organs. The relation between focal infections and the circulatory, respiratory, muscular and other systems are discussed in detail. There are fascinating chapters demonstrating these immediate relationships and the relief or aggravated conditions of heart, kidneys, joints and nerves by the extraction of infected teeth, the foci of such disturbances. Lack of space forbids further consideration of these two most interesting volumes. The author is to be congratulated on the splendid work he has accomplished and the benefit accruing equally to the physician and dentist by perusal of this great work. SMITH.

**Pathogenic Microorganisms**, a practical manual for students, physicians and health officers. By William Hallock Park, M.D., Professor of Bacteriology and Hygiene, University and Bellevue Hospital Medical College, etc.; Anna Wissels Williams, M.D., Assistant Director of Laboratories of the Department of Health; and Charles Krumwiede, M.D., Assistant Director of the Bureau of Laboratories, etc., New York City. Eighth edition, enlarged and thoroughly enlarged with 211 engravings and nine fullpage plates. 811 pp., \$6.50. Lea and Febiger, Philadelphia and New York, 1924.

This is a work of unusual merit, a book that will entertain and instruct, alike, the undergraduate and practitioner, since the one finds, conjoined with his technical work, those practical points so soon to be his greatest need, while the other has at hand a portrayal of his modern, practical requirements intimately linked with the latest theory and technic. No better illustration can be offered than a brief outline of the Schick reaction and its concomitants:

"A positive reaction appears in twenty-four to thirty-six hours in the majority of cases, but in some it is delayed as late as seventy-two hours, and is characterized by a circumscribed area of redness and slight infiltration which measures from 1 to 2 cm. in diameter. It persists for seven to fifteen days, and on fading shows superficial scaling and a persistent brownish pigmentation. The test represents a true irritant action of non-neutralized toxin.

Pseudoreactions are seen occasionally in young children and more frequently in adults. They are almost never present in very young infants. These are local sensitization phenomena of a general protein character, and can usually be distinguished from the true reaction due to specific toxin. They appear earlier, are more infiltrated, less sharply circumscribed and usually disappear in twenty-four to seventy-two hours. If the reaction is read on the third, fourth, or fifth day, the pseudoreaction seldom causes difficulty in the interpretation in children, but in older children, and especially in adults, the pseudoreactions may persist as long as the Schick reaction. On fading they leave a faintly pigmented area which may show superficial scaling." WEST.

**A Text-Book of Pathology.** By William G. MacCallum, M.D., Professor of Pathology and Bacteriology. Johns Hopkins University. Third edition. Thoroughly revised. Octavo volume of 1162 pages with 575 original illustrations. Philadelphia and London. W. B. Saunders Company, 1924. Cloth, \$10.00 net.

In this work no attempt has been made to describe systematically the various disease conditions which may occur in any organ of the body, neither are the names of diseases prevalent in the index, so that as a book of reference its value is negligible. The subject is handled more in the sense of general pathology, and it seems unfortunate that this fact was not incorporated into the title of the book. The text has been "constructed upon the idea that all pathological disturbances are result of some form of injury, or the immediate or remote reactions of the body to injury." Also, "the whole book is planned therefore to discuss disease as far as possible upon the basis of etiology." These two statements, taken from the author's preface, seem to a certain extent at least, incompatible.

It is difficult to see how a work can be constructed on the idea of "injury" producing disease, and at the same time having "etiology" as its basis, for the reason that injury and cause are distinct from each other. We can hardly conceive of injury arising spontaneous. Therefore, as a rule we must consider there is first, a cause, and then an injury, and that the two are separate and distinct—cause and effect—and how both of these can be the major basis of text is not plain. Throughout the book for this, or other, reason, the author does not seem to lead his reader along a definite and well-marked path, but often leaves him with an uncorrelated mass of statements for his own digestion. There is so much which is new and valuable in the book that one regrets they are not presented more cohesively. WEST.

**Operative Surgery**, covering the operative technic involved in the operations of general and special surgery. By Warren Stone Bickham, M.D., Ph.D., F.A.C.S. In six volumes. Volume V. Cloth. Price, \$10 per volume. Pp. 880, with 1118 illustrations. Philadelphia, W. B. Saunders Company, 1924.

The present volume bears out our good opinion

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of this work as expressed in a previous review in this journal. It deals with the operation on the colo-recto-anal tract, the kidneys and suprarenals, the ureters, bladder, male urethra, penis, scrotum, testes and the structures of the spermatic cord. The descriptions of the operations are clear and their value enhanced by helpful illustrations. Particularly do we commend the author's treatment of the diseases of the colon and rectum, always a difficult subject to present in good perspective and without some confusion to the reader who wishes to choose a procedure appropriate to a specific case. Though there is no dearth in the number of operations described, the indications for the use of each are clear.

FORBES.

**Abt's Pediatrics.** By 150 specialists. Edited by Isaac A. Abt, M.D., Professor of Diseases of Children, Northwestern University Medical School, Chicago. Set complete in eight octavo volumes, totalling 8,000 pages with 1,500 illustrations, and separate Index Volume free. Now ready—volume V. containing 865 pages, with 373 illustrations. Philadelphia and London, W. B. Saunders Company, 1924. Cloth, \$10 per volume. Sold by subscription.

This volume is largely orthopedic surgery, rather than pediatric material. The chapter on general pathology of bone in children by Phemister contains an unusually fine discussion of osteomyelitis and other bone condition of childhood. Such chapters as surgery of tendons and traumatic dislocations are of general surgical rather than of pediatric interest, and probably too few surgeons will find them in a pediatric work. The entire field of orthopedic surgery as applied to children is covered in this volume. The latter third of the book is devoted to infectious diseases that are not distinctly diseases of childhood, ranging from tuberculosis and syphilis to bubonic plague and Malta fever. The discussions of tuberculosis and lues are particularly satisfactory. Illustrations are abundant throughout the book.

MOHR.

**The Practice of Pediatrics.** By Charles G. Kerley, M.D., formerly Professor of Diseases of Children, New York Polyclinic Medical School and Hospital, and Gaylord W. Graves, M.D., associate in Diseases of Children in the College of Physicians & Surgeons, New York City. Third edition, revised and reset. Octavo of 922 pages, 150 illustrations. Philadelphia and London, W. B. Saunders Company, 1924. Cloth \$9.00 net.

This third edition presents new material to cover the pediatric developments of the past four years. The book is essentially clinical, and is particularly fine as a presentation of bed-side pediatrics. While the discussions are uniformly well rounded, it is particularly in therapy based on personal experience that the book is strongest. Clinical cases are abundantly cited. The book is of the greatest value to the practitioner who seeks definite therapeutic recommendations. Dr. Gaylord W. Graves is for the first time associated as co-author.

MOHR.

**Anatomy of the Human Body.** By Henry Gray, F. R. S., lecturer on anatomy at St. George's Hospital Medical School. Twenty-first edition, revised by Warren H. Lewis, B. S., M. D., Professor of Physiological Anatomy, Johns Hopkins University. Cloth. Price, \$10.00. Pp. 1417, with 1283 illustrations. Philadelphia. Lea & Febiger, 1924.

It is now sixty-six years since the first edition of Gray's Anatomy appeared, but we have been favored during that time with many subsequent editions altered in varying degrees by different authors. In this present edition Lewis has brought to date our newer knowledge of anatomy. The change from the twentieth edition has not been great, although it has been revised, that on the architecture of the heart musculature also being considerably enlarged. The B. N. A. nomenclature remains practically unchanged.

FORBES.

**The Surgical Clinics of North America.** (Issued serially, one number every other month.) Volume IV, Number V (Portland-Seattle Number, October, 1924), 263 pages, with 112 illustrations. Per clinic year (February, 1924, to December, 1924.) Paper, \$12.00; cloth \$16.00 net. Philadelphia and London. W. B. Saunders Company.

This volume has a special attraction to the readers of this journal because its contributors are all from among them. Among the many interesting reports, that of Jones is to be noted in which he mentions several cases with unfavorable postoperative conditions relieved by intravenous injections of glucose and insulin. This treatment is of no value in combating sepsis or a pure surgical shock, but furnishes a striking relief in some patients in a desperate condition from a state of acidosis. Rockey summarizes in a convincing manner, with illustrative cases, the principles of his transverse incision for appendectomy, manifesting its superiority over other methods of treatment for this condition. Holden and Moran describe the successful treatment of a patient with abscesses of the liver by intravenous use of mercurochrome. There are several reports on aspects of the goiter problem with other instructive discussions.

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## ADDRESS

### CANCER: AN ADAPTIVE RETREAT OF THE CELL FROM PHYSICAL ADVERSITY\*

ALPHA EUGENE ROCKEY, M.D., F.A.C.S.  
PORTLAND, ORE.

An all too common point of view on the nature of cancer is reflected in the atmosphere of mystery surrounding the discussion of the problem. I put the question, "what is cancer?" to a number of the fellows of this society, as I met them recently. Their replies were, "I wish I knew, we will know some day," and others to that effect. Today I believe that nine out of ten would make similar replies. In the light of present available knowledge I do not feel that such answer is justified. The abstruse will always hold a greater fascination for men than the obvious.

On a previous occasion<sup>1</sup> I endeavored to make the biologic basis for cancer as plain to others as it seemed to be to me. Mystery can only be dispelled by truth. The fact seems to me no longer mysterious. In this "no man's land" of uncertainty, the willful charlatan finds his prey, and the well meaning but uninformed advisor makes his mistakes, and illustrates the truth of the dictum that a little knowledge is a dangerous thing. We are striving

to knock the eightieth planetary electron off the atom of mercury, when the pure gold of biologic truth has been in plain sight for a long time.

There are many associated facts in the study of cancer that are true and interesting, but are rather inconsequential, and serve only to becloud a clear understanding of the question. Much that is abstruse may be true, but open to the classic objection of the lawyers, "It is incompetent, irrelevant, and immaterial."

Cancer is a cellular growth, and its study is well within those biogenetic laws that have been formulated by Darwin, Haeckel, Lamarck, Virchow, and many of their coworkers and followers. A thorough, comprehensive, unprejudiced consideration of basic biologic facts should dispell the mystery, and answer for our colleagues the question, "what is cancer?"

Let us begin with a few elementary facts that will serve as axioms. All living things are composed of cells. The protozoa are single cells, whose plasm supplies the mechanism for nutrition, locomotion, and the sexless reproduction by fission. The metazoa are multicellular animals, whose cells have a differentiation of structure and function, and whose reproduction, aside from an occasional pathogenesis, is sexual and bipolar. Cancer, as we know it clinically, occurs only in vertebrates.

The study of embryology will supply us with the definite basis of our knowledge. Simple as it may seem to you, you will fail to attain an understanding without such a beginning. Let us return then to the vitalized ovum, which becomes the morula,

\* President's address, read before North Pacific Surgical Association, Portland, Ore., Dec. 12-13, 1924.

1. Pan-American Medical Association, San Francisco, June, 1915; S. G. & O., Feb., 1916.

and then, as it increases in size, efficiency and growth, acquires a differentiation of structure and function. The side of the spherule then becomes a cup, eventually a tube, and we have the epiblast and the hypoblast, with the tissues between which we call the mesoblast. Please keep in mind that these tissues between were derived from the outer layers, and in the subsequent defeat of purpose by the stress of physical adversity, the adaptable medium into which they retreat is of their own kin. Now in the further process of growth and building up of the body comes an enormous specialization of tissue, that is an adaptation to function and use. Within the brief time of an address we must ask you to reassemble your knowledge, and visualize the separation of the layers and organs, and remember this paramount fact, that they have a tendency to stay in place, and to perform certain functions. Nature is nearly perfect but not absolutely so, and by reason of heredity and environmental influences variations occur, and in these we may find the origin of all that is different in growth.

At this point we must leave behind normal growth, and not considering malformations, devote ourselves to that phase of abnormal growth called "tumors." We pause here only to remark that, having a common origin with other body cells, tumors are still due solely to congenital and environmental influences. We must repeat this often, and not lose sight of it. It is fundamental. We are familiar with the distinction made between benign and malignant tumors, and for the present we leave that behind, and keep to the subject of cancer.

By cancer we understand a certain definite clinical entity sufficient for the purpose of this discourse. We find that cancer is an irregular accumulation of cells of a modified epithelial structure of atypical arrangement and habit. The minute structure or properties, the irregularity of the polar bodies, the disarrangement of the chromosomes, if or whenever such exist, or any variation in electrical reactions, are significant only in proving its irregularity. Beyond that the enormous study devoted to them has yielded only results of relative importance. The dominant fact remains that they have grown and multiplied lawlessly but persistently, slowly or rapidly as they were supplied in nutriment, and a suitable environment in which to grow. They respond to biologic law as to growth. As cells they typify the survival of the fittest, and an adaptation to an environment in which they can survive, illustrating

by their persistence that self-preservation is the first law of nature. Other than survival they have no place in the structure of the body; they result from what I have called physical adversity. Irritations of various sorts have long been known to precede the formation of cancer, but irritation does not fully express what takes place. This brings us at once to a more concrete consideration of what it is.

Cancer is an adaptive retreat of the cell from physical adversity. Every word must prove its usefulness and correctness, or be eliminated.

Retreat. When the undifferentiated cells of the primitive morula have finally expanded into epithelial covering of the body, and lining of the glands, they have a definite place and purpose. When for any cause they lose their ability to hold position and power, it is a retreat. Haeckel's law, that "the history of the tribe lays bare the true causes of the history of the germ," finds constant verification in the study of cancer, and retreat under adversity is one such action. The retreat must be adaptable to the growth requirements of the cell, no longer able to maintain itself in the economies of the body. How like human beings these cancer cells do act.

We gain a better comprehension of these requirements by the study of tissue culture in vitro than in vivo. Carrel has grown cells from the heart muscle of the chick, lo, these many generations, through thousands of cultures, by providing an adaptable environment. This has provided a means of growth only and not function. The growing tissue has never yet made a functioning heart. Experimental biology has provided us with a sound basis, from which we may make pertinent deductions. Raymond Pearl (Chapter on Cellular Immortality, *The Biology of Death*, page 67) uses the term "potential immortality." Potential immortality means that so long as the conditions of growth are present, the cell continues immortal. The cells in Carrel's tissue culture are the direct descendants of cells that have lived far longer than those in the oldest chicken alive. And yet it is recognized that the condition of their immortality is that the conditions of the life of the cell must be preserved. It is no more true in a tissue culture than in the cells of cancer that have been deviated from their purpose of the economy of the body.

What do we mean by physical adversity? We mean physical conditions adverse to cellular prosperity. If the ear of a rabbit be repeatedly painted with tar, the rabbit after a time develops cancer. The tar is irritating. That irritation constitutes a

physical adversity, which the tender skin of the rabbit's ear cannot withstand. Not only is the surface epithelium affected, but the subcutaneous tissues as well. Both sets of cells share the adversity. The continuous physical adversity in addition causes a more active defensive mitosis in the cell to endeavor to survive, and also breaks down the normal antagonism between the epiblastic and mesoblastic tissues, and admits of the retreat of the actively mitotic cells of the epiblast into an adaptable environment into the mesoblast. The further retreat through the lymphatics, or other body structures, and the setting up of new colonies of growing cells which, while potentially immortal themselves, tend if unchecked to the destruction of the host.

The amazing persistence of the life and growth of the cell, regardless of what it was or becomes, is decidedly in response to that first law of nature, which is self-preservation. You will now readily see in the various "irritations" examples of such adversities as may act as a cause of cancer.

An adaptive retreat for the embarrassed cell is essential for the growth of cancer. The one thing, above all others, that has taken the mystery of special creation away from our knowledge of evolution has been our study of adaptation to environment.

We will gain a better conception of what an *adaptive retreat* is by examining an *adaptive invasion*. The parasite-like behavior of the metastasizing cancer cell has often been noted. It is a question at what stage we should consider the migration of the deposited cell an *invasion* or a *retreat*. The displacement certainly begins as a retreat, but as in human warfare *retreat* may end in *invasion*. We may give Haeckel credit for the score. An adaptive invasion is that of the parasitism of *Sacculina*.<sup>2</sup>

"The young larva of *Sacculina* is a typical entomostracan crustacean larva which swims about and leads a free life for a time, but soon attaches itself by means of its antennae to a hair pit of a crab, a small hole in the latter's armor. The internal tissues of the larva then undergo degenerative processes and are reduced to an almost fluid mass of embryonic cells, which flow through the hair pore of the crab, and into the latter's lymph spaces. The small mass of cells then rounds up and is carried about with the circulation of the

crab's blood until it comes to a favorable place of lodgment, usually the wall of the intestine just back of the stomach. Here it flattens out and sends root-like branches almost all over the crab's body, like a malignant tumor in its invasion of foreign tissues. The unbranched part of the parasite is little more than a sac of reproductive organs, and these produce eggs and sperms, which unite to produce larvae. By this time the host is killed and, with the decay of its body, the larvae escape into the sea water ready for a brief period of free life before attacking another host."

Much confusion has arisen by considering cancer due to a *cause*, taking precedence over and aside from ordinary biogenetic law. It is a confusion of *the cause* with what may be shown to be only a *cause*. This has given rise to various theories, which we may briefly sum up as the theory of irritations, the parasitic theory and Cohnheim's theory. Associated also are such various questions as: Is cancer contagious? Is cancer hereditary? How is the occurrence of cancer chiefly at or past mature age explained? Is cancer increasing? All these must be examined by the standard of our present definition of cancer as an adaptive retreat of the cell from physical adversity.

A recapitulation of various irritations would be useful in keeping in mind that these constitute definite sources of physical adversity, in that they present conditions in which the integrity of the cell is destroyed, and its resumption of function rendered difficult. Briefly we may mention radiation, heat, the sun, x-rays, radium, chemical irritations, as tar, anilin, paraffin, creosote, lime and others. Closely associated with these may be organic toxalbumins or endocrines, exerting detrimental effects chiefly upon glandular structure. Trauma, either frequently repeated, or a single one, may set up some condition adverse to the normal physiology. Examine the consequences of any one of these irritations, and you will find that in producing cancer they constitute physical adversity, which the functioning cell cannot survive.

As Cohnheim's theory has a biologic basis, let us first examine it in relation to our present definition. With the marvellous complexity of the body structure, it would be demanding much more of nature to expect that the cells would all be anatomically perfect and in place, than to find embryologic variations. In such variations certain of them constitute subnormal cells and grouping, and subnormal cells, like subnormal people, are more

<sup>2</sup> Newman, Readings in Evolution, Genetics, and Eugenics. Chapter on the Background of Darwinism—Adaptations. University Press, Chicago, 1922.

likely to go wrong than those that are normal. For this reason in imperfectly developed embryonal groups, which Cohnheim recognizes as rests, we find groups that yield more readily to physical adversity, and that are not only predisposed to develop cancer, but what we call benign tumors as well.

Ewing (Neoplastic Disease, Second Edition) has a chapter entitled "The Parasitic Theory." On page 121 is this: "Biology cannot argue *the* cancer parasite out of existence." How fortunate for science that there is no need to disprove of it by argument. We may charge it with all malevolence except being an exclusive cause. If the title of that chapter be reworded to read, "Observations on the Parasitology of Cancer," there need be no conflict with biology, and there will be no "parasitic theory." The observations are of great practical value, and explain certain causes of cancer that are as definite as those of the various chemical irritations, which we have just mentioned. The whole so-called parasitic theory is settled by this simple adjustment, but it robs the individual parasite of any exclusive proprietorship of the grimest enemy.

We would dismiss the matter with this remark, were it not for the fact that in nothing more than in the parasitology of cancer is "mystery" so much exploited, nor does rank charlatanism find so fertile a field. This exploitation is the cause of much serious neglect to do the right thing, much suffering from doing the wrong thing, and in creating false hopes that are never fulfilled. The profession itself is not without responsibility in this exploitation. A specific instance was recently severely, and quite justly, condemned in an editorial in the *Journal of the American Medical Association*.

As we would expect from our definition of what cancer is, it is contagious only as it may be transplanted into a suitable environment, or may be due to some microbic cause which is in itself contagious. These are conditions that biologically and clinically seldom happen, and the whole question has only a relative collateral interest.

The question of heredity is of great importance. An essential factor in the production of cancer is the imbalance between adversity and resistance. Ruggedness of structure is certainly an inherited quality of tissue and, conversely, tissue debility and instability are qualities of the germ plasm, and consequently the predisposition to cancer may be inherited.

Closely associated with the question of heredity

is a consideration of the avoidable physical adversities that are known at times to underlie a certain incidence in cancer. An important thing in the control of cancer is the avoidance of physical adversity in the exposure of groups of cells. The disregard of early irritations is a fruitful cause of cancer.

Civilization has an important bearing on the incidence of cancer. The ambition of civilization is success, and this to many means money and power, and the price is stress. This has become a dominant characteristic of civilization that is certainly acquired, and its frequent appearance in certain families is mentioned in proof of its inheritance. Success has no time for trifles. The local discomforts that are incident to a beginning physical adversity that may terminate in cancer may be slight and easily borne. They are disregarded. "It amounts to nothing" is the decision. "Some other time will do to give it attention."

There are several sects, whose ambition for success makes it a tenet of their religion not only to disregard sensory, or even ocular, evidences of physical adversity, but even to deny their existence. But when adversity has passed the point of tolerance, and the cell makes an adaptive retreat to preserve its existence, or even changes the retreat into an invasion, the consequences of disregard and neglect are proved by the autopsy, and no longer admit denial.

The question of age in cancer is a most important one. Those of you who were fortunate enough last summer at the Meeting of the Pacific Northwest Medical Association to hear Professor Horst Oertel, of Montreal, deliver his masterful address on "Flow of Structure in Relation to Age and Disease,"<sup>3</sup> and those who have read papers by himself and his associates on allied topics<sup>4</sup> will readily perceive the influence of age in the incidence of cancer.

Oertel injected the arterial tree with a barium gelatine mixture, and made radiographs at different ages and in different conditions of disease. These show in a most graphic way the changes in circulation incident to age. Oertel harmonizes these with changes in the other tissues, and remarks that such changes would have a definite influence in the production of cancer.

Cancer comes at a time the tissues, mature, are

3. Northwest Medicine, November, 1924.

4. Oertel, American Journal of the Medical Sciences, May, 1921. Gross, Journal Medical Research, July, 1917.

in the decline in vitality, or persistence of position. The cells are less adaptable to change, and consequently give way more readily to physical adversity as to function and place, but retain an innate tendency to perpetuity of existence, or, to use the phrase of Raymond Pearl, their immortality. This is a reason for the greater incidence of cancer at the age of maturity.

Most clinicians believe that cancer is greatly on the increase. The enormous total of 100,000 cases per year for the United States alone, and similarly large figures for other countries, argue for their belief. This is explained on the ground of better vital statistics and better diagnoses, but it is doubtful if the conditions warrant such conclusions. Rather would it seem to be attributable to the complexities of living, and the condition of civilization.

May I at this time invite you into a clinic where we will show you an example of an adaptive retreat of the cell from physical adversity? This will be in broad day light with the naked eye.

The man is about fifty years of age, well nourished, and of a rather florid complexion, and is an inveterate smoker. He has, as you can plainly see, a smoker's cancer of the lip.

The history he gives is that for about a year past he has had a small sore on the margin of his lower lip. It would heal over at times, and then reappear. At first it would be covered with a dry scale that would remain in place for days or even weeks. Then it had a slightly disagreeable feeling, and he fell into the habit of moistening it with his tongue. It has been worse in the past few months.

On palpation we can feel a couple of small nodules under the chin, and one quite distinctly under the angle of the jaw.

Let us interpret the findings. At about the age of full maturity the tissues are on the borderline of decline (Oertel), and do not react so well from detrimental agencies as they do in youth. The locality of the lesion is at the margin, where the tissues change somewhat in character, as they do in requirement, from an exterior to an interior use. Similar localities are rather prone to cancer in other parts of the body. The adversity which afflicted this group of cells, which once covered this man's lip, was the pressure and heat of his pipe and cigar, and the alternate drying and maceration with a saliva laden with smoke products which are not very unlike the creosote which formerly caused chimney sweep's cancer, or the tar with which the laboratory worker now paints the rabbit's ear. These substances and conditions are all irritating, and their continuance constitutes a definite physical adversity to the cell. An avenue of retreat is available. The adjacent cells from the deeper embryonal layer have suffered a similar adversity. They

provide an adaptable retreat, in which the embarrassed cell may find lodgment and suitable nutrition. It is a tissue culture *in vivo*. Here the cell may find an opportunity for self-preservation. Here it may attain a potential immortality. As it slips along the lymphatic channels the retreat may even become an invasion.

If we should examine at autopsy a piece of the liver of a Baltic fisherman, whose diet had included a liberal proportion of raw fish, the tissues might be seen in the gross to be filled with cancer.<sup>5</sup> Investigation has shown that these fish were infested with the larvae of trematodes. This trematode has a predilection for the gallbladder and ducts, where they accumulated, and, becoming a source of physical adversity, led to an adaptive retreat of the cell, which might continue its existence in that accumulation of exiles which we call cancer.

This story might be repeated from laboratory specimens of cockroach-eating rats, and other parasite carriers, as well as the degenerations surrounding gumma and ordinary ulceration. Who has failed to observe the four plus Wassermann ulceration of the tongue improved under antiluetic treatment, and yet improved only, and later followed by cancer of the tongue. Who has failed to see ulcers of the stomach that had every appearance of ordinary ulcer, and probably were much improved by gastroenterostomy, and yet find the patient later dying of cancer of the stomach. These can be interpreted to mean that, although the cause of the original adversity had been removed, the cells were not able to rearrange themselves in an order for proper function, and that enough of the original irritation remained to compel an adaptive retreat, which continued to the formation of cancer.

This understanding of what cancer is harmonizes entirely with the whole parasitic theory, while not expressing the same conclusion, or rather expressing this conclusion in the same terms. The work and conclusion of other pathologists has sensed this thing in very much the same way. I particularly refer to that of Burrows as worthy of your thoughtful attention.<sup>6</sup>

This view on the etiology of cancer has an exceedingly important bearing on what we may do to cure it. When the cell has once started on its dangerous retreat, we may find some pertinent

5. Myer, Willy: Some Notes on Cancer, with Special Reference to the Parasitic Theory, *Journal of Cancer Research*, 1924, VIII, 45.

6. Burrows, Montrose, T., Factors Regulating Cellular Growth, and their Importance in the Explanation of Cancer, *Southern Medical Journal*, April, 1924.

directions in the homely advice of David Harum, when he says about your enemy, "Do unto him what he would do unto you, but do it first." There must be no compromise. Total annihilation without a chance to get away, and be prompt about it. Here is an opportunity for some real missionary work, both among the public and the profession. We should all realize that there must be no compromise.

A definite understanding of the underlying facts will be the most important element of our safety. The time has come to discard the uncertainty. This is a bare outline, which you may complete from your knowledge of biology, which gives an unmistakable explanation of the mystery—the adaptive retreat of the cell from physical adversity—and this is cancer.

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**Typhoid Epidemic in Chicago Apparently Due to Oysters.** Herman N. Bundeson, Chicago (Journal A. M. A., Feb. 28, 1925), reviews the data of 129 verified cases of typhoid fever reported in Chicago from Nov. 30, 1924, to Jan. 21, 1925. Sixteen of the 129 patients died, a case fatality rate of 12.4 per cent. There is no indication that the public water supply was concerned in this outbreak. Only 3.6 per cent of the patients gave a history of having used bottled waters. Investigation has disclosed no common milk supply, either in the homes or eating places, for the majority of the patients reported during the epidemic. There was no common source of ice cream for the cases, fifty-eight patients, or 44.9 per cent, reporting that they had eaten ice cream during the probable infection period. To these, the ice cream was supplied by fifteen different dealers. There was no common source of ice supply in the homes of these patients. The histories disclose that 90.5 per cent of the patients ate celery and 86.6 per cent ate lettuce. An additional 6.5 per cent are reported as probably having eaten celery and 10.5 per cent probably having eaten lettuce. Of the patients under consideration, nine, or 7 per cent, gave a history of having eaten raw oysters, and four, or 3.1 per cent, oyster stews in the home. Out of the total of 129 cases, ninety-two or 71.5 per cent, gave a definite history of having eaten one or more meals in high class restaurants and hotels within Chicago during the probable period of infection. All these hotels and restaurants have the general city water supply. Only one uses well water in addition to the city water supply. In fifteen instances all the water supply for guests was filtered. The hotels and restaurants in question are located in at least six different water supply districts. The milk, cream, whipping cream, ice cream and cheese supplied to this group of hotels and restaurants were investigated very thoroughly. It was found that there was no common source of supply for these dairy products. Blue point oysters supplied by one shipper were probably responsible for sixty-nine cases, or 65.1 per cent of the cases, of typhoid fever in persons who contracted the disease in Chicago; that is, who were not out of town during the probable period of infection. This includes patients who gave a definite history of eating raw blue points and who contracted the disease from four to twenty-eight days thereafter.

## ORIGINAL CONTRIBUTIONS

### COLONIC STASIS\*

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For our modern conception of the subject of intestinal stasis in its broader aspect we are indebted to Sir Arbuthnot Lane. We may not follow him to the end that we believe colectomy is a logical treatment for the disease in any of its forms or that the soil created by the absorbed toxins is the cause of cancer or tuberculosis, but we are in complete agreement as to the pernicious effects of abnormal delay and the tissue degradation which follows the absorption of toxic end-products of intestinal origin.

More recent workers grant a triple aspect to this disease, one due to toxemia, one due to the mechanical effects of bands and membranes, and one due to the traction of an over-burdened or poorly developed colon. The picture in well defined toxemia is familiar to all. Malnutrition is obvious; the skin loses its clearness and pigmentation is frequent; cold hands and feet bespeak a poor circulation; physical work is borne poorly and mental depression, amounting sometimes to hysteria or melancholia, is often present. The greatest absorption probably takes place in the lower end of the ileum, when a distended cecum has rendered incompetent the muscular mechanism of the ileocecal valve. In long continued cases, however, pouching of the colon with areas of irritation, erosion or ulceration developing in the pouches, infection combined with decomposition become an important factor.

Of particular interest is the effect of abnormal bands and membranes developing in relation to the cecum and ascending colon, the resulting symptoms resembling such well known diseases as appendicitis, carcinoma and renal crisis. At birth the proximal colon possesses a complete mesentery and the cecum is situated in front of the right kidney. Gradual descent into the right iliac fossa is accompanied by the disappearance of the mesentery, when the colon with its vessels becomes largely retroperitoneal. It is the variation of this process which gives rise to the different forms of abnormal colon and permits classification based upon the degree of fusion, the fourth degree being complete nonfusion.

In a recent study McConnell and Hardman have

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recorded their observations in a series of cases and have reached the following conclusions:

In the male the average length of ascending colon is 7 inches. Hepatic flexure in above crest (erect)  $1\frac{1}{2}$  inches; (recumbent) 4 inches. Range of vertical excursion  $2\frac{1}{2}$  inches.

In the female the hepatic flexure is somewhat lower. The ascending colon in these series was straight in 82 per cent with a slight lateral mobility in 92 per cent, while the average healthy symptomless male type was present in 66 per cent. They divided the abnormal colons into three types, depending upon the variations in fixation, the length of the mesentery and the location of bands. These they styled collapsed, angulated and prolapsed. The x-ray appearances and clinical history are distinctive in each of these types, though similar in ascending and collapsed. It is characteristic of these two that pain and discomfort are referred to the right iliac fossa and associated with obstructive symptoms which are intensified by constipation, fatigue and poor tone of the abdominal wall. Relief is obtained by the recumbent posture and the effect of this posture is important in ruling out an inflammatory causation. In the prolapsed type the right iliac fossa symptoms are less evident, complaints being due to traction, causing interference with the function of other organs. It is more amenable to treatment by posture, diet and mechanical supports, 90 per cent being thus relieved of pain. McConnell and Hardman emphasize the importance of examining the patient in the erect posture. This is the posture in which symptoms are present and, if the surgeon relies on his exploration for information, he will often be deceived by the apparent normal position in which the structures lie.

Much has been written about the origin of the bands and membranes which to some extent determine the type of defective colon, the best explanation now being that, following Lane's law of "crystallization of the line of strain," certain acquired bands are produced in such a way as to be effective in supporting a structure which would otherwise suffer too greatly from ptosis due to defective peritoneal support provided during the period of its early development. It is the thickening and contraction of these one-time beneficent bands, associated with the ptosis due to a prolonged drag, that causes the final pathologic state. The purpose of operative treatment is to broaden the attachments and distribute the support. Confusion arose regard-

ing the importance of the congenital defect because symptoms seldom manifested themselves before the twentieth year and then only as a mild dyspepsia. Even then lengthy periods of immunity would follow before the prolonged traction, probably due to the weight of fecal masses, caused the ultimate pathology in a colon no longer able to compensate.

Traction on other abdominal organs through the medium of peritoneal attachments has accounted for a variety of clinical pictures, simulating disease of these organs and obscuring the colonic defect. Congenital folds may lead to the gallbladder, duodenum, stomach and kidneys, and Waugh has classified his cases of right-sided colonic ptosis clinically, according to the organ thus affected. Symptoms are often vague and indefinite and, though they may closely mimic well-accredited lesions of these organs, investigation will show where the picture is incomplete. Where appendicitis would naturally be thought of, for instance, we find the pain is not characteristic, as it is never referred to the epigastrium, and is not associated with muscular rigidity; fever may be absent and, though the pain may be present for several days with irregular intermissions, relief is usually obtained by recumbent posture. A distended cecum and colon can nearly always be made out with diffuse tenderness on mild pressure. Mass formation as with abscess never follows here.

In a series of postmortem examinations at the Great Ormond St. hospital, Pirie found that in children under twelve, 20 per cent had defective peritoneal fusion of the right colon, and in over 100 operations by Waugh the findings verified the clinical diagnosis. The symptoms in children may be mild or severe, the mild cases being somewhat nauseated, slightly distended and requiring enemas for relief. In severe cases vomiting is urgent, obstipation complete, the fever high and acidosis well developed; convulsions are not infrequent and the gravity of the condition is apparent to both parent and physician.

Such a case was that of D. M., age 7, referred to me in November, 1923. A recent attack, characterized by intestinal obstruction and acidosis, had left him in an enfeebled physical state; convulsions and delirium had been present while the pulse was weak and rapid. Such attacks had been recurring since the age of two but increasing in severity with shorter intermissions. Efforts to locate the trouble through examinations at various clinics had failed to disclose a demonstrable cause, and treatment had been ineffective. Under fluoroscopic examination by barium enema we were able to find a definite point of obstruction in the colon just proximal to the splenic flexure. After much delay enough barium trickled

through to show a distended cecum and ascending colon.

On Nov. 7 the abdomen was opened under spinal anesthesia, when a strong band, evidently developmental in character, was found crossing the colon at the point of suspected obstruction. It extended from the omentum to the splenic flexure and on being divided the relief to the colon was apparent. The abdominal organs were apparently healthy.

The child suffered not the slightest ill effect from the operation and his general condition began to improve at once. The results a year later we find to be most satisfactory. The bowels have moved naturally, usually twice but always once a day, a laxative being only occasionally required. No convulsion has since taken place. Although mild attacks of acidosis have developed at intervals of several weeks. They have passed off in a day or two. The most noticeable change of all has been in the child's increased growth and general physical expansion. Increased strength has kept pace with growth and he can now be said to be normal in size and weight for his age.

In a more recent case of a child age 2 years, the symptoms were similar and had been present from birth. The radiographic findings were identical.

Operation under spinal anesthesia, on Nov. 5, disclosed a number of pathologic bands, one in particular crossing the transverse colon near the splenic flexure and greatly reducing the bowel lumen. The baby has since passed through an intestinal attack coming at the usual time, but its difference has been marked. Instead of the usual five days it lasted but a few hours and was controlled by enemas and administration of alkalis.

Although these cases illustrate a condition, where obstructive bands have been the determining factors in the production of so-called intestinal attacks, it is well known that other causes, such as abnormalities of the sigmoid with elongation and dilatation, with or without spasm of the rectal sphincters, are more common. It is the exceptional case that requires relief by surgery.

The adult form of obstruction with colonic stasis is well illustrated by the case of Mrs. A. J., age 36, first seen in November, 1922. She had suffered mild dyspeptic attacks for twenty years and remembers that these have always been associated with abdominal discomfort, especially on the right side. The intervals between these were now becoming shorter, while the attacks were becoming more pronounced.

Her present complaints were those of nausea, loss of appetite, loss of weight and abdominal discomfort, at times amounting to real pain. Constipation was relieved with difficulty and mental depression was associated with a profound lassitude. Physicians had labeled her neurotic.

Examination showed the patient to be suffering from symptoms typical of intestinal toxemia. The abdomen was relaxed and the right colon and cecum were distended and tender. X-ray examination showed a typical angulated colon with adhesions at the hepatic flexure, while the duodenum was seen to be dilated, tenderness in the epigastrium being localized to its position.

At operation in December, 1922, a healthy appendix was removed and adhesions were separated at the attachment of the transverse colon to the hepatic flexure. A colopexy was then performed. The results to date have been exceedingly gratifying. She suffers from none of her previous symptoms, has gained 40 pounds in weight and mental depression has given way to a normally healthy optimism. Her ill health

had caused her to give up work a year before the operation, but in five weeks thereafter she was again actively engaged in her old occupation.

In a general way the treatment of colonic stasis must be based upon the underlying pathology. An encouraging response to medical treatment will be made in the great majority of instances. This treatment may of necessity be somewhat prolonged and require careful supervision. The basis thereof will be diet, largely consisting of vegetables, fruits and cereals; laxatives such as liquid paraffin, agar, kaolin, flaxseed and yeast, and appropriate physical drill. A properly fitting belt or corset may be indispensable. Surgical treatment should be reserved for the condition which resists medical measures and aims at restoring the lumen of the bowel, releasing angles and kinks which cause obstruction, and attaching it by broad fixation so that its weight will be distributed and distortion or pressure on other organs thereby relieved.

The operation of colopexy was advocated by Wilms in 1908 when the fixation was limited largely to the cecum. He made a slit in the parietal peritoneum on the outer side of the colon and placed the cecum in a sort of pocket, fixing it there by interrupted sutures. His operation was later amplified by Waugh who extended it to include the ascending colon and added to it in many instances by suspending the transverse colon to the anterior parietal peritoneum. This extended colopexy demands a free exposure and close attention to detail for its success. The cecum and colon are first shortened by a plication which sutures together the anterior and external tenia, care being taken to avoid angulation at the hepatic flexure, when the edge of the parietal peritoneum is fixed to the suture line. The greatest care must be exercised to avoid needle puncture of the bowel, as retroperitoneal infection occurs easily. Chromic catgut is preferable to linen and complete hemostasis is an important essential.

The so-called indirect colopexy, modified by Coffey, consists in shortening the mesentery of the ascending colon and cecum by interrupted purse string sutures, completing suspension at the hepatic flexure and transverse colon by attaching them laterally and in front. In a way each form of fixation has its indications.

As the prime object of the operation is to relieve the patient of his symptoms, it is not sufficient that the colopexy be entrusted with the entire responsibility. Careful search, especially of the lower ileum and sigmoid regions, must be made for obstructive adhesions. The sigmoid particularly is liable to be

fixed by what Lane calls "the first and last kink," and its release is important for relief. In women the sigmoid is often attached to the broad ligament, the connection being the cause of chronic pain at this point. Lane is insistent that this adhesion is the primary cause of colonic distension and ptosis, and has recently stated that its correction has often made it unnecessary to perform the more severe operation of colectomy. The appendix, of course, is removed as a routine and a Meckel's diverticulum is always searched for. It is unnecessary to say that the usual examination of other organs with a special regard for duodenal abnormalities or obstructions would be made preliminary to the colopexy.

#### CONCLUSIONS

1. Well known diseases of certain abdominal organs may be simulated by conditions due to traction or obstruction of an abnormally fixed ascending colon.

2. Biliary, duodenal, gastric, renal and right-iliac-fossa types are conspicuous in the clinical features of the disorder.

3. An accurate estimate of the extent and nature of the abnormality in the ascending colon can be made by proper clinical and radiographic studies.

4. Before operating for any chronic abdominal complaint associated with indefinite pain and discomfort, coloptosis should if possible be ruled out as a primary cause.

5. Response to conservative treatment is often gratifying but the results of colopexy in selected cases is uniformly satisfactory.

### CHRONIC DUODENAL OBSTRUCTION\*

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Many articles on chronic duodenal obstruction have appeared in recent medical literature. Some observers, notably Wilkie,<sup>1</sup> Kellogg<sup>2</sup> and Coffee,<sup>3</sup> are well convinced that this condition is a definite pathologic and clinical entity which must be considered in right upper quadrant diagnosis.

I have observed, however, that very few clinicians of my acquaintance have adopted this classification as one to be considered in the differential diagnosis of obscure "stomach trouble," and shall present some clinical experiences in support of the contention that chronic duodenal obstruction is a pathologic and clinical entity. My study of this subject has been strongly stimulated by a few operative

cases of unmistakable chronic obstruction at the terminal end of the duodenum, and by the further fact that x-ray experts have sent back negative reports in eighty per cent of the cases referred for gastroenterologic study.

The following anatomic facts are fundamental:

(1) The duodenum is a relatively fixed segment of the gut, but must have a definite degree of mobility for proper function. (2) The terminal end of the duodenum is almost immovably fixed in front of the second lumbar vertebra, and its lumen is normally narrow at this point. (3) The chief supporting element of the mesentery and the superior mesenteric vessels are attached to the posterior wall of the abdominal cavity at a point immediately above the terminal end of the duodenum, pass directly over it and place this tube in an acute angle with solid bone behind and a cord of varying tensity in front. (4) The mesentery is sometimes congenitally short. (5) The hepatic flexure of the colon and the ascending colon sometimes fail to complete their peritoneal fusion and their weight is added to the normal pull on the mesentery. (6) The duodenum is sometimes congenitally malformed. (7) The anterior mesentery, into which the liver bud develops in the embryo, sometimes persists beyond the right border of the lesser omentum as a disabling band. (8) The gallbladder and the kidney, organs peculiarly subject to disease, lie in immediate contact with the duodenum. (9) The stomach, the liver, the pancreas and Brunner's glands discharge their secretions into this segment of the gut to set going an energetic chemical process that is incomprehensible up to the present date. (10) The sympathetic nervous system is very complex in this region.

Acute gastromesenteric ileus gives us our best starting point for reasoning about pathology. The surgical world has now concluded that the cause of acute dilation of the stomach, black vomit, and early death after operations is an acute obstruction of the third portion of the duodenum, where it passes under the mesenteric artery with very rapid generation, and absorption of some very poisonous duodenal substance. This conclusion is confirmed by the fact that repeated irrigation of the stomach and posture for relaxation of the mesentery will promptly relieve such patients. It is, furthermore, an established fact that acute gastromesenteric ileus sometimes develops after operations which do not invade the abdomen or after fractures, and one is forced to conclude that in any instance there must

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struction of the duodenum previous to, and perhaps have been some degree of narrowing or partial ob-responsible for, the acute obstruction.

Pringle<sup>4</sup> and others conclude that the chief cause of death in acute intestinal obstruction is a toxin which is developed largely in the duodenum, and it is a well known fact that symptoms are more acute and death more rapid the higher the site of obstruction in the intestinal canal. We also know that emergency enterostomy drainage succeeds in acute intestinal obstruction only when it drains the jejunum high up. These facts support further the belief that a free flow of contents and an unobstructed chemistry in the duodenum is vital to well being. Sweet, Draper and Whipple have demonstrated an extremely toxic substance developed in the duodenum, and almost certainly derived from protein disintegration, a proteose. This substance is many times more toxic than the diphtheria toxin. McVicar<sup>5</sup> is not convinced, however, that a toxin is responsible for death in cases of high intestinal obstruction, and directs attention to the fact that the blood chemistry is seriously changed with urea, chlorids low, and CO<sub>2</sub> blood plasma combining power high.

Seven years ago I was consulted by a very poorly nourished, anemic school teacher, 30 years of age, who had long suffered from stomach trouble. Her symptoms were those of loss of appetite, gas distension in the upper abdomen; an early feeling of fullness after eating, and inability to get rid of the gas by enema; a reduction in articles of food and the amount taken until she was eating very little; loss of weight; general malaise; loss of strength; dizziness; constipation. She had been forced to give up her school work, and after many diagnoses and much treatment was no better.

After a full study of her case I was unable to make a diagnosis, and did an exploratory laparotomy. The stomach, the pylorus and the duodenum were hugely dilated. The duodenum from the pylorus to its termination was four inches in diameter. The jejunum, beginning abruptly at the mesentery, was collapsed to a mere ribbon and the remainder of the intestine was likewise collapsed and very largely prolapsed into the pelvis. The hepatic flexure of the colon and the transverse colon were also in the pelvis. With the finger I could demonstrate beyond question that the mesentery was stretched so tightly across the terminal duodenum that its lumen was almost entirely obliterated.

This woman had a very positive chronic duodenal obstruction, the result of ptosis, and an abnormal pull on the mesentery, and I have found in the literature of the past three or four years many reports giving precisely the same pathology, notably those of Wilkie, Kellogg, Deaver, Coffee, McKentrie<sup>6</sup>, Quain.<sup>7</sup> This case and those reported in the literature leave no doubt in my mind about the existence of such a lesion as chronic duodenal obstruction, and

I cannot escape the conclusion that there must exist every degree of obstruction of the duodenum between that shown in this rather extreme case and a normal lumen. My attention has been much directed to this subject during the past year or more, and my study leads me to attach very great importance to any mechanical interference with the duodenum.

At least ten cases of right coloptosis with mesenteric drag, and demonstrable constriction and dilation of the duodenum, have been relieved of their stomach symptoms by operative replacement of the ascending colon and hepatic flexure. Some of these have been diagnosed as cholecystitis.

Two young women, who had been operated upon for appendicitis, illustrate my point in a very clean cut way. One had a 90 per cent ulcer history and negative x-ray findings; the other epigastric fullness, continuous right upper quadrant pain, and could not eat. Both were disabled. Both showed a band of omentum as tight as the G string of a base violin extending from the mesentery above to the cecum and scar below. The mesenteric angle was narrow and the duodenum dilated. Both were totally relieved by division of the band. At least one persistent anterior mesentery was found in a position across the duodenum to produce obstruction.

I have made the further observation that gallbladder cases, giving the symptoms of stomach trouble, qualitative food disturbance, gas, headache, bilious attacks, depression and malaise, are usually accompanied by adhesions which seriously kink or cripple the duodenum, and am strongly of the opinion that these are largely duodenal and not gallbladder symptoms. This conclusion has led me to devote painstaking care to the technic of covering all raw surfaces, oftentimes the entire duodenum, with omental grafts, and with exceptional results in some very extreme cases.

Surely chronic duodenal obstruction is a pathologic entity, and when one considers the complex chemistry of the duodenum, dependent as it must be upon prompt peristalsis; when one considers the highly poisonous proteose described by Sweet, Draper and Whipple; and lastly when one considers the profound changes in blood chemistry following rapidly upon the development of high intestinal obstruction as described by McVicar, little doubt can remain about the classification of chronic duodenal obstruction as a clinical entity.

A clean-cut and unmistakable group of symptoms cannot be defined, yet I am of the opinion that in the absence of positive findings for ulcer, cancer, gallbladder or kidney, the following symptoms indicate chronic duodenal obstruction. Loss of appe-

tite, gas distension and pain in the upper abdomen; an early feeling of fullness at meals; a gradual reduction in articles and amount of food taken; periodic attacks of vomiting or bilious attacks; loss in strength and weight; neurasthenia; dizziness; malaise. Rest in bed after meals beneficial. Duodenal enlargement not always demonstrable by x-ray.

These sound like the general symptoms of many abdominal conditions, and they are, yet I have learned to think routinely of duodenal stasis as a possible diagnosis with some such grouping of symptoms, and am finding in this explanation the most brilliant results I get in the treatment of "stomach trouble." Sixty to seventy-five per cent of such cases will be cured by a proper abdominal belt, elevation of the foot of the bed eight inches for sleeping hours, the knee chest position for twenty minutes twice daily, mineral oil for the bowels, and hydrochloric acid internally. When a patient is not relieved by these measures, when a barium study reveals real ptosis pathology on the right side, or when the patient has had a previous abdominal operation, I feel justified in operating for the correction of some one of the pathologic lesions described above.

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### ACUTE INFECTIONS OF THE COSTAL CARTILAGES\*

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A few years ago I treated a case which, although it recovered, left me with the unpleasant feeling that the result was due more to good luck than to good management.

Male, age 59, fell on the ice in the early part of January and struck his left shoulder and the left side of his chest. A "lump" appeared on his chest and on the advice of his doctor it was poulticed, finally breaking down and discharging pus. This continued until June, when he went to a second doctor who curetted the cartilage of the rib. After this operation he was left with a discharging sinus which persisted until March of the second year, when he was operated on again. The wound never healed.

Dr. Luhn and I operated on him in October of the second year. The remains of the cartilage of the 4th rib, the tip of the 4th rib for about two inches and one and a half inches of the cartilage of the 5th rib were removed. The pleura was accidentally opened but repaired without difficulty. The wound

was partially closed and packed with iodoform gauze. The patient left the hospital in two weeks with a slight discharge from the wound and for the next twelve months it continued to discharge. During this time I dressed it with various and sundry preparations and toward the latter part of his treatment used silver nitrate fused on a probe and plain packing. Finally, one year after his last operation and two years and ten months after his original injury, the sinus closed and has remained closed.

Keen's Surgery, in an article by Brewer, describes what he calls "progressive necrosis of the costal cartilages." He says: "I have encountered three examples of this disease. In each of these two or more operations were necessary to bring about complete healing, for the reason that only that portion of the cartilage was removed at the primary operation which appeared to the naked eye to be diseased; and it was only at the second or third operation that the cartilage removed was sufficient to bring about a cure. Although Keen in 1898 called attention to typhoid infection of the costal cartilages, the fact that other varieties of infections, occurring in these structures pursued a like obstinate course, has not been generally recognized."

Murphy, in an article on bone and joint disease and typhoid in S. G. & O. for August, 1916, says: "In the treatment of typhoid perichondritis, periosteitis or osteitis, opening and curetting has been the usual course followed up to this time. The results have been exceedingly bad, in that the cases are not cured by this line of treatment. What should be done is a large flap operation, exposing all of the costal cartilages and sternum of the side involved or on both sides. The cartilages and bone involved should be laid bare, and when a cartilage is involved, no matter whether it is a shirt-stud involvement or an extensive involvement, all of it should be removed, with at least a half inch of the bone of the sternum at its attachment and from the rib at its attachment. This should be done with each succeeding cartilage until one is entirely beyond the infected zone."

Moschowitz, in a paper before the American Surgical Association, in 1918, says that he has seen quite a number of patients who suffered from diseased costal cartilages. Practically all were regarded as tuberculous, some because the organism was found, in others because established therapeutic efforts did not always result in a cure. "On rare occasions I succeeded in permanently curing a patient afflicted with diseased costal cartilages, but the cure was dearly bought, and only at the expense of extensive operations and long invalidism. I also

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confess that I did not interpret correctly the reason or reasons why I failed to heal many of these cases. If a case was cured, I assumed that the supposed tuberculous tissue was completely extirpated. I now know that the real reason was that the last operation, after many unsuccessful preliminary ones, finally removed the last trace of cartilage, no matter whether diseased or healthy, thereby permitting a final closure of the wound."

Axhausen (*Archiv. f. Klinische Chir.*, Vol. XCIX) relates in detail the treatment of a patient afflicted with tuberculosis of the 6th rib, in whom the rib did not heal after repeated operations, whereas after the first operation only one sinus existed which led to the fifth and seventh ribs as well. With characteristic thoroughness he utilized this case to investigate very carefully the reasons of the nonhealing of infected wounds of the cartilages. These investigations enabled him to make a number of very important and valuable observations. Primarily he lays stress upon the great difference in the blood supply of bone and cartilage. Whereas the former is very porous and has a very rich vascular supply, the latter is very much more compact and is extremely poor in blood vessels. This alone would speak for a much more rapid recuperative energy in the former. It is well known, for instance, how rapidly a bone injury becomes repaired, while an injury of cartilage of similar extent remains practically unchanged for a very long period. The absence of Haversian canals and cancellous substance in cartilage, both of which are so important in the process of a repair of a bone injury, is a second important reason why injuries of cartilage fail to heal.

Judging merely from observations upon the bone, in which there is a proliferation of the periosteum at the junction of the living and necrotic bone, and which progressively separates the two, it may be argued that a similar occurrence takes place in cartilage. Experiments and examinations of a large number of specimens have, however, shown that, although the perichondrium always produces chondrocytes in profusion, these never grow into the cartilage, and these are of no value in separating the living from the necrotic cartilage. These chondrocytes never become actually continuous with the original cartilage; there is always present a slit-like space between the two, which is filled with pus and granular tissue. Briefly my personal experience coincides with the cases quoted, i.e., the

remaining cartilage was traumatized by the gauze packing and gradually exfoliated until it all sloughed out.

The conclusions which may be drawn are that, while typhoid and tuberculous infections of the costal cartilages are most common, any pus producing organism may be the exciting cause.

As cartilage exposed in an infected wound does not heal and practically always produces a sinus, the affected cartilage should be removed in toto and the wound closed without drainage.

### THE TREATMENT OF DIFFUSE PERITONITIS\*

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Up to within a few years the mortality from acute peritonitis was very high in the hands of the average surgeon. Gradually the profession has begun to realize that a number of factors are concerned in the production of a fatal issue and has evolved measures to combat these, so that now we can expect a very much lower mortality than we had, say, ten years ago.

For the sake of discussion, the principal factors to be considered are: (1) Septic absorption from the peritoneal cavity, (2) intractable toxemia, (3) dehydration, (4) acidosis, (5) starvation, (6) complications.

#### SEPTIC ABSORPTION FROM THE PERITONEAL CAVITY

There has been a great deal of debate as to whether one should wait, when presented with a case of diffuse peritonitis, after the first forty-eight hours of the disease. It is my opinion that all cases of diffuse peritonitis should be operated upon immediately, irrespective of its duration, except in the pneumococcal type. Of course, the localizing type of gonococcal peritonitis is not treated in this paper, but occasionally it becomes diffuse and should then be treated as the other forms of diffuse peritonitis.

On account of the fact that in some cases of localized peritonitis it is not advisable to remove the originating focus, some still believe that it is not necessary to remove it in the diffuse type. This I believe to be a great mistake. The originating focus should always be removed in the diffuse form of peritonitis, whether it be an intestinal perforation, appendicitis or a gonococcal tube.

A number of years ago flushing of the abdomen

\* Read before Annual Meeting of North Pacific Surgical Association, Portland, Ore., Dec. 12-13, 1924.

was extensively used but later fell into more or less disrepute. Its partial abandonment was due, I believe, mainly to the facts that rough handling of intraabdominal structures usually accompanied its use, and that at that time the other factors concerned in a fatal issue were not duly appreciated. All cases of diffuse peritonitis should have the abdomen flushed out with at least two gallons of normal saline solution at a temperature of 110° F., poured through a pitcher with absolutely no handling, mopping or suction.

The question of drainage has been differently answered by different surgeons. Recognizing all the shortcomings of abdominal drainage, I still believe that all cases of diffuse peritonitis should be drained. I should advocate placing a rubber tube at the originating focus and another in the pelvis.

All cases should immediately be put in the Fowler's position and kept there for at least seventy-two hours. Later it may be advantageous to turn the patient on one side or even on the abdomen.

The literature contains a number of reports of the advantages of lymphaticostomy. I have had no experience with this procedure but it appeals to me theoretically.

#### INTRAINTESTINAL TOXEMIA

Intestinal toxemia may be dealt with either by the duodenal tube or enterostomy. In the milder cases the duodenal tube seems to do as much good as enterostomy, but in the more severe cases, where the patient is extremely ill at the time of operation, an enterostomy should be made at that time. I believe that in the bad cases a jejunostomy is more efficient than an ileostomy. It seems to me that the simple Witzel technic is the best.

#### DEHYDRATION

Many a patient has been lost, due to the simple fact that he has been allowed to become dehydrated. It is not at all uncommon to see cases in consultation where the surgeon has assumed, that, because he has ordered proctoclysis ad libitum, the patient was getting enough fluid into the system, whereas very little had been absorbed. In the cases of marked intestinal paresis the fluid must be given either subcutaneously or intravenously.

#### ACIDOSIS

Due to the toxemia and inadequate alimentation, acidosis often becomes a very important factor in determining the outcome of the case. The acidosis is in part taken care of by the administration of large amounts of fluid, but in addition often re-

quires the exhibition of alkalis. Here, again, one must be sure that they get into the circulation. If they are not absorbed by the rectum, they must be given either subcutaneously or intravenously.

#### STARVATION

Formerly it was not at all uncommon to see patients recover from their peritoneal inflammation and then die from a combination of starvation, dehydration and acidosis. This is no longer common, although one sees it sometimes even now. From the beginning of the postoperative period sufficient glucose should be got into the organism to maintain the metabolic processes until oral alimentation is permissible. With the elimination of dehydration, acidosis and intestinal toxemia, the peritonitis subsides very much sooner than formerly. As soon as the digestive apparatus will accept food, it should be given and gradually increased according to the digestive ability.

#### COMPLICATIONS

One should be on the constant lookout for complications, such as pneumonia, empyema, subphrenic, etc., and if they arise, give them the appropriate treatment. A very frequent occurrence is to overlook a complication until it has lasted so long as to make its successful treatment an improbability.

#### SUMMARY AND CONCLUSION

1. Diffuse peritonitis has shown in the hands of the more competent a marked decrease in mortality during the last ten or fifteen years.
2. Early diagnosis is very important.
3. In diffuse peritonitis the originating focus must be removed; the abdomen must be flushed out without manipulation, sponging or suction; the intra-intestinal toxemia should be intelligently treated; dehydration must be prevented; acidosis should be combated; starvation should be minimized; and all complications diagnosed early and appropriately treated.

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**Value of Electrothermic Methods in Treatment of Malignancy.** Electrothermic methods are described by Grant E. Ward, Baltimore (Journal A. M. A., Feb. 28, 1925), that are said to be effectual in removing benign and malignant accessible tumors in a large percentage of cases. Electrodesiccation and electrocoagulation complete a quadrangle of therapeutic agents to be used in the treatment of accessible malignancy. Surgery, roentgen ray and radium are all essential, but fall short often. Desiccation or coagulation in combination with one of these methods adds the much needed facilities in the successful treatment of cancer. As technic is perfected and experience is enlarged, the percentage of cures and good palliative results will be greatly increased by combining these methods.

LOCALIZED PERIOSTEAL SARCOMA OF  
THE TIBIA. REPORT OF A CASE  
TREATED BY EXCISION AND  
CAUTERY\*

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The study of the problem of malignancy, especially that of cancer, has had the attention of our profession and the public for two or more decades, but only within the past three years has there been any intensive and organized effort, as outlined by the committee for the American College of Surgeons in Codman's<sup>1</sup> article. He states, "We feel that these cases are too rare for each individual clinic to work alone, and that the plan outlined will bring before surgeons in general, in the most rapid possible manner, the facts as they develop."

Ewing<sup>2</sup> says, "It is obvious that the problems here involved are of major character and demand the most intelligent cooperation of the surgeon, radiologist and pathologist. From results already obtained I am convinced that large rewards await the resourceful worker, by using all of the means now at his disposal in reducing the mortality from this lethal disease."

Codman<sup>1</sup> has given credit to the profession in the small centers for contributing much valuable material because it is based on knowledge obtained through personal contact between the surgeon and his patient over a long period of time, which is so necessary to the actual determination of end results in this study, before they are of value.

The foregoing statements are my reason for presenting one case history to this society with the idea of making a small contribution to a big subject.

One thing that impressed me, after submitting the excised specimen of bone tumor to so eminent an authority as Dr. Bloodgood for his examination and report, was the receipt of the following telegram from him: "Section of tumor of tibia, Briggs, sarcoma. Advise immediate deep x-ray treatment but do not amputate."

I had intended to advise amputation in this case, if the report confirmed malignancy, which was suspected from its gross appearance at the time of the exploratory operation.

He advised that my patient's chances for recovery with the conservative operation already performed were nearly as good as with amputation in

this case. This advice is substantiated by recent reports in literature, which do not indicate a hopeful ultimate prognosis for the lower limb<sup>3</sup> exceeding 8 per cent with any form of conservative or radical treatment. Therefore, my patient preferred to chance any extra hazard with the former method.

Murphy<sup>4</sup> stated in one of his clinics nine years ago that the local operation often accomplished as much as an amputation, because the latter was never an achievement, as it signified the doctor's failure to save the part. He also noted the advantage of gaining the patient's prompt consent to a less radical operation at an earlier date than would be possible otherwise.

Carless<sup>5</sup> mentions the unsatisfactory results of radical surgery and the trend of surgeons away from mutilating procedures. In the series<sup>1</sup> of the first 454 cases of suspected sarcoma, approximately 75 per cent had to be excluded for reasons of incorrect diagnosis or indefinite clinical data; about 10 per cent could be accepted as instances of osteogenic sarcoma and only four cases of this group of true bone sarcoma are alive, who were treated five years or more ago. Death usually resulted before the end of the third year, usually at or near the thirtieth month.

A review of the literature<sup>1 3 6 7 8 9</sup> on this subject indicates the unsatisfactory situation as to ultimate cures either by radical or conservative methods.

Ewing<sup>2</sup> states, "The knowledge of tumors of bone and marrow is still in the descriptive stage. Abundant clinical material, wide clinical experience and knowledge of embryology, physiology and pathology of bone are the more essential qualifications for successful investigation in this field."

Bloodgood,<sup>3</sup> in a very recent article says, "It is important to remember that, when a lesion comes under observation, we cannot always diagnose it or place it in a pathologic group.

"We can take and record a clinical history, we can make all of the laboratory investigations, including the x-rays and then we can palpate. With these data at hand and recorded, it is essential to come to some conclusion as to the method of attack which will give the best assurance of a permanent cure with the least mutilation. We must also bear in mind that amputation should be done without delay, if the evidence indicates that this procedure offers this assurance.

"From my personal studies I find it most convenient and helpful to divide lesions of the bone into two great groups, based upon the x-ray picture, namely, central and periosteal sarcoma."

\* Read before the Forty-sixth Annual Meeting of State Medical Association of Montana, Helena, Mont., July 9-10, 1924.

Myerding<sup>7</sup> in a recent excellent article calls attention to the value of the x-ray in the diagnosis and prognosis of sarcoma of long bones.

The difficulty in relying entirely on pathologic reports is clearly outlined in a private letter from Beasley. "During the last year I had eight cases at the Cook County Hospital and have submitted the slides to Dr. Codman who has given them to such men as MacCarty, Wright, Mallory and Ewing. I am mentioning this before making the next statement, which is that rarely did any two of the diagnoses agree. I have one boy by the name of Osborne with what seemed to be a sarcoma of the forearm, from all clinical signs, and I have twelve different diagnoses by twelve good men and they range from the most malignant type of small round cell sarcoma to the Codman diagnosis, which is simple inflammatory exudate. I am merely making the above statement to show how difficult it is for us to be sure about the exact nature of a connective tissue tumor. I am coming to believe that from my x-ray pictures I can interpret the facts which are as essential in the differential diagnosis as the microscopic slide."

F. B., age 25, occupation plumber, single, American.

Family history: Negative for cancer, tuberculosis, diabetes, epilepsy and mental conditions. Mother is living and well. Father dead, age 49; cause, alcoholism and liver disease.

Previous personal history: Pneumonia at age of 3; tonsillitis, three separate attacks, mumps and chicken pox. He had a thorough general examination at our clinic in April, 1921. At that time he was troubled with acne vulgaris.

Present history: On November 5, 1922, he came to our clinic because of a painful lump on his left tibia, which was located in the upper third on its anterior and mesial surfaces. It had been present for six weeks previously. There was no history of trauma but the puttees had been rubbing the part, causing some discomfort. On palpation, the entire area over a radius of 3 cm. was tender to palpation, and there was a small area somewhat softer and more painful, resembling lymphatic gland on the apex of the ossifying growth.

The patient was advised, after several examinations, that this might be a simple exostosis or a sarcoma. The development of sarcoma is so insidious, that it is doubtful as to diagnosis in this case, so exploration was advised on December 11, 1922.

The patient failed to realize the seriousness of his condition and did not accept our advice at this time.

Our re-rays in January, 1923, were not as definite as sixty days previously.

Another x-ray was taken May 11, 1923. The lateral view shows the new growth of the bone is larger, as is the superimposed soft part on top of the bone tumor. The tumor has grown very little in the interval between the date of the first symptoms in September, 1922, to the date of the operation, covering a period of eight months. Dr. Bloodgood re-

ports that it is the smallest localized sarcoma that he has seen.

Operation: Exploratory operation was performed on May 13, 1923. A section of the tibia, 7 c.m. long and 4 c.m. wide, was removed from the anterior and mesial surface of the left tibia with the chisel. The cavity from which the bone growth was excised was thoroughly cauterized at once with the electric cautery at its base and sides. The skin and other tissue overlying the area were incised with the electric knife preliminary to the removal of the growth.

Pathology: The specimen was sent to Dr. Bloodgood for his report and advice. In part he says, "Apparently you have excised the tumor. Now I have a longitudinal section and find on top of the intact cortical bone a new growth of not normal bone, in which there are soft parts with very little bone."

Microscopic: "The frozen section from the soft parts in this tumor shows an undoubted sarcoma of the osteogenic type; spindle and round cells, in a dense eosin staining stroma, sclerosing type. Histologically it is undoubtedly sarcoma."

Additional subsequent history to January 19, 1925.

In Dec. 1923, while performing in a local talent opera, the patient suffered a direct blow to the left leg by one of the associate performers kicking the injured extremity in a dance act. The tibia was fractured through the weakened excised area of the tibia. He was in bed for six weeks following the receipt of the injury and about with crutches and cane for the following five months, when the leg was sufficiently strong to bear the weight without any discomfort and only a slight limp being noted. Since that time he has been performing all the duties of a master plumber.

Following the application of radium needles to the bone cavity, July 1923, the skin over the area sloughed, together with several bone areas that were in proximity to the four radium needles, giving the bone a vacuolated appearance in the x-ray films. One burned part on the tibial crest is a firm dry necrosed area. The sequestrum has not become detached and I have allowed it to remain for the mechanical support that it temporarily furnishes locally. The cavity is gradually healing with firm granulation tissue anterior to the area of bone union following the fracture.

Frequent examinations and re-ray of the parts fail to find any evidence of metastasis.

Subsequent history and treatment since the operation:

The leg was treated with heavy deep x-ray therapy in May. On July 5, 1923, under aseptic precautions, 100 mgr. of radium needles were inserted in the bone cavity for twenty hours. The organized tissue and skin sloughed for the next sixty days. Since September the cavity has been filling in gradually with healthy granulation tissue. At this time the radiograph does not reveal any local recurrence or metastasis to the lungs.

The patient is steadily employed as a plumber. There is no loss of weight or any unusual discomfort.

(I desire to acknowledge to Dr. Bloodgood my appreciation for his suggestions, assistance and advice in this case.)

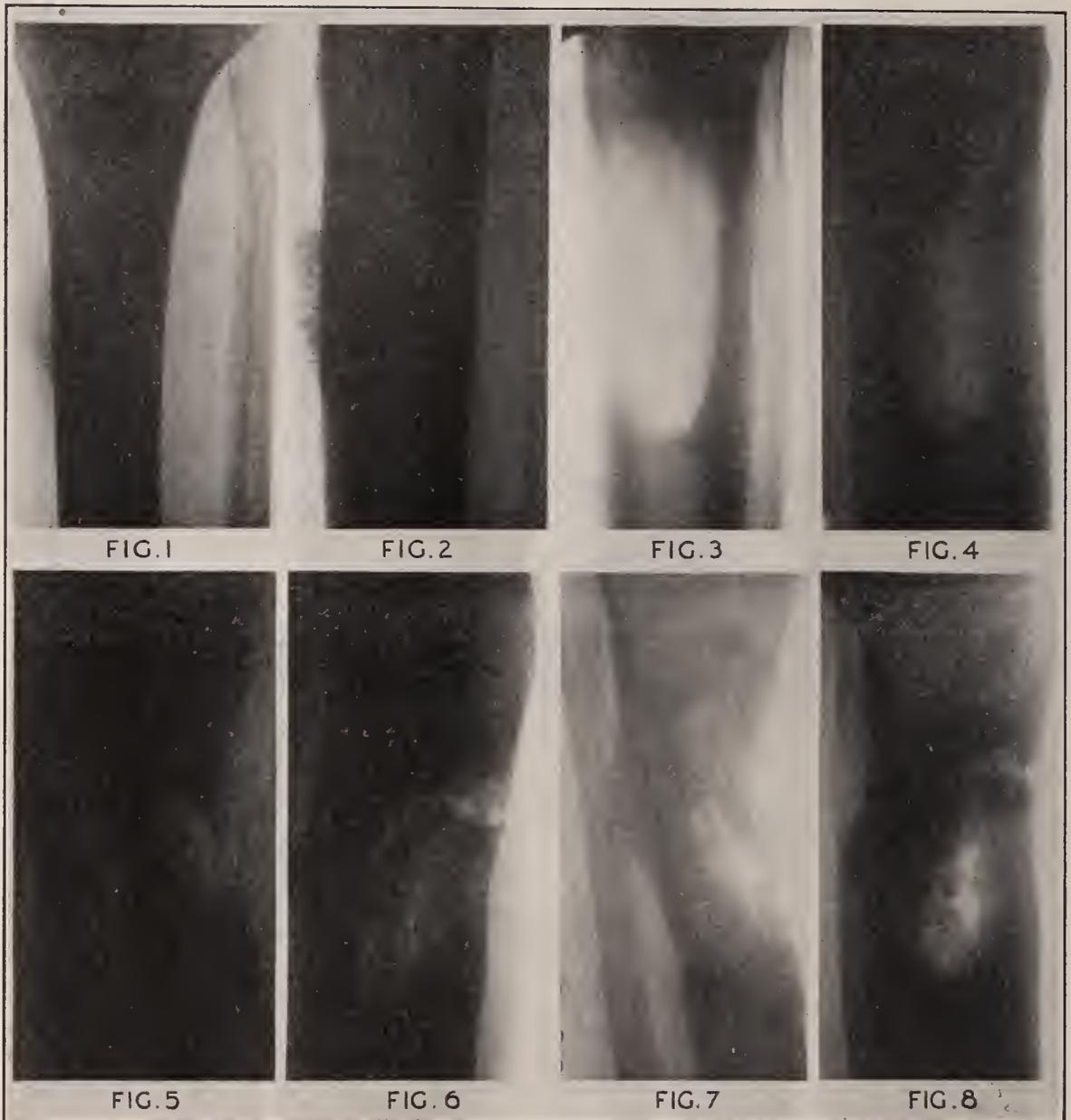


Fig. 1. Bone outgrowth on the mesial surface of the upper third of the tibia, when first observed, Nov. 5, 1922.

Fig. 2. The growth as observed on May 11, 1923, just previous to excision. Note the intact cortical bone.

Fig. 3. The appearance of the excised area June 13, 1923, after deep x-ray therapy and three weeks before the radium needles were inserted in the sterile clot in the area.

Fig. 4. Radium needles were inserted in the area on July 5, 1923. The appearance after this treatment more than two months after, on Sept. 13. The radium caused local areas of bone necrosis and a slough of the overlying skin.

Fig. 5. Taken April 28, 1924, five months after the accident that fractured the involved area which was ex-

cised. Bone union was firm enough at this date to support the body with the aid of a cane. Anteroposterior view.

Fig. 6. Same as 5. Lateral view.

Fig. 7. Taken Jan. 19, 1925, more than thirteen months after the fracture. Note vacuolated areas produced by radium necrosis. The bone union is firm and strong and the patient is following his daily vocation as a plumber. Chest plates made at this date are negative for metastasis. Anteroposterior view.

Fig. 8. Same as 7. Lateral view. Taken Jan. 19, 1925. Demonstrates much the same as the anteroposterior. The small dark spots in the center are deposits of bismuth subiodide. The posterior surface demonstrates the new callous formation with firm bone union at site of fracture. The areas of destruction and necrosis produced by radium are the vacuolated areas in the center.



Fig. 9. Bloodgood's report, microscopic. "The frozen section from the soft parts of this tumor show an undoubted sarcoma of the osteogenic type. Spindle and round cells, in a dense eosin staining stroma-sclerosing type. Histologically, it is undoubtedly sarcoma." "Diagnosis: Bone tumor. Periosteal sarcoma of tibia. Excessive ossifying type like exostosis."



Fig. 10. Bisected gross specimen, resected May 13, 1923. Bloodgood's report: "The gross section is apparently a piece chiseled off of the shaft of the tibia. It measures 7 cm. long and 4 cm. wide. On one surface is apparently normal cancellous and cortical bone. On the other side there is a new growth of bone, like an exostosis 2 cm. in height." "Now I have a longitudinal section and find on top of the intact cortical bone a new growth of not normal bone in which there are soft parts with very little bone."

#### CONCLUSIONS

1. In selected cases of localized osteogenic sarcoma of the extremity, the surgeon is justified in treating the case with the method of wide excision and cautery of the involved or suspected area, subsequently using radium, deep heavy x-ray therapy and other methods that may be helpful in the attempt to prevent local recurrence and metastasis, especially to the lungs, early in the onset of this lethal disease.

2. By advocating a lesser surgical procedure than amputation, the early consent of the patient can more readily be obtained. The growth can be examined for purposes of gross and microscopic diagnosis.

3. Finally, it is advisable to make early and frequent roentgenograms of the chest and extremities in suspected cases for immediate and future study, also submitting them for expert interpretation and advice, thereby preventing unnecessary amputation of the involved extremity.

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A CASE OF OSTEOCHONDROMA OF  
THE FEMALE BREAST  
WITH A REVIEW OF THE LITERATURE  
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Bony tumors of the female breast are of relatively rare occurrence. They are interesting on account of the difficulties in diagnosis, the theories of their occurrence and their relative rarity. For these reasons it was thought advisable to record a case seen on the Second Surgical Division of the New York Hospital, and to give a review of the literature in this condition.

Mrs. B., aged 67, English, entered the hospital complaining of a small lump in her left breast which she had first noticed ten months previously. It had been slowly increasing in size and lately had become painful. She had no recollection of any injury to this breast. Physical examination revealed a well-nourished elderly woman in apparent good health. There was a stony hard irregular mass about 4x6 cm. in size in the left upper quadrant of the left breast. It was freely movable upon the deeper structures but seemed to be attached to the subcutaneous tissues. There was no retraction of or discharge from the nipple. No tenderness, dimpling of the skin or palpable nodes in the axilla.

A radical mastectomy was performed by Dr. Eugene H. Pool and the pathologic report of Dr. W. W. Beattie was as follows: "Specimen consists of a breast, muscles and fascia. Nipple not retracted. No evidence of nodes in axillary tissue. There is a hard irregular lump in the left upper quadrant of the breast. Incision over this area reveals a round irregular tumor about 3x5 cm. in size which is encapsulated and can be shelled out of its bed with only slight difficulty. It is stony hard and irregular and cuts with difficulty, the knife encountering many areas which appear to be cartilage and in other places calcified tissue.

Microscopic examination. Sections of the tumor show large areas of cartilage, in which the lacunae are irregular in size and distribution. In many places the cartilage is calcified and some parts are replaced by trabeculae of new bone which are surrounded by osteoblasts and a small amount of fibrous connective tissue containing blood vessels. There is no evidence of glandular structure in any of the sections. A section of the capsule shows many bands of fibrous tissue with patchy round cell infiltration. No epithelial tissue or evidence of malignancy (fig. 1).

REVIEW OF LITERATURE

In reviewing the literature one finds reported twelve cases of tumors of the female breast, composed purely of cartilagenous and osseous tissue. There were in addition thirty-one cases<sup>1</sup> of sarcoma of the breast, in which osseous tissue was present in a greater or less degree and was considered evidence of a degenerative change or unusual cell activity.

All the cases reviewed here have been in women and the majority have been observed in the so-called

cancer age. Cases have been reported in men which were in reality osteochondromata of the ribs and should not be included in this group of rare breast tumors.

The earliest case on record is that reported by Morgagni<sup>2</sup> who noted an irregularly shaped tumor of thirty years duration in the breast of an elderly woman, which upon incision revealed an irregular tumor of osseous tissue about the size of a walnut. Similar cases have been reported by Sir Ashley Cooper, John Collins Warren, Cruveilhier, Velpeau and Nelaton. In 1881 Lange<sup>3</sup> reported a case of a woman aged 51, who had noticed a small "cherry-sized" lump in her breast for twenty years, until it had gradually increased to the size of a "nutmeg." She had had no symptoms until a few



Fig. 1. Microphotograph of section of tumor showing the trabeculae of bone surrounded by cartilage. About the bone trabeculae are osteoblasts and a small amount of fibrous connective tissue.

months before, when it became painful and a yellowish fluid was discharged from the nipple. There were several slightly enlarged axillary nodes. The breast was amputated and the tumor found to consist of true cartilage and bone. The most recent case of this nature to be reported is by Davidsohn<sup>4</sup> in 1909.

Despite these reported cases, the occurrence of such tumors of cartilage and bone was doubted by many pathologists even as late as 1889 and the names of Billroth and Gross in this group impress one with the rarity of the condition. However, reports of such cases continued to appear now and then, tending to confirm the evidence that such tumors do occur in the female breast and conse-

quently considerable discussion has arisen as to their source.

It is interesting to speculate as to the origin of these growths when occurring alone or with sarcomata. Is their development in such instances due to the same factors or do they represent two separate processes? Williams<sup>5</sup> has collected several cases. He believes that such tumors are occasionally found in otherwise normal breasts and he attributed their presence in these situations to sequestrations of small portions of the matrix and the evolving thoracic skeleton at an early age of development. He also explains the cartilage and osseous tissue associated occasionally with malignant neoplasms by this hypothesis. This explanation is generally accepted, but the correctness of the view is not demonstrated and it is quite probable that some cartilagenous tumors arise by metaplasia of other tissues.

In the dog a large portion of mammary tumors contain cartilage and bone and the histologic structure strongly suggests its formation by metaplasia from connective tissue. Twenty-two cases of this nature were observed in the laboratory of surgery of Columbia University and one case of chondroosteosarcoma, arising spontaneously in a dog, was successfully transplanted through three generations by McWhorter and Prime<sup>6</sup>.

Instances of the presence of cartilagenous and osseous structures with malignant growths of the breast are numerous. Among them the case reported by Battle<sup>7</sup> in 1886 is worth quoting. "A woman, aged 73, presented a hard circumscribed tumor the size of a large orange at the inner part of the right breast. It consisted of two bosses; an inner, the size of a walnut, which was very hard and rounded and of long duration; and an outer one which was much larger and more elastic and of comparatively recent formation. Skin over inner part of tumor adherent and red with nipple retracted, otherwise freely movable. Single enlarged hard node in axilla. Breast removed and the soft part of the tumor consisted of a spindle-celled sarcoma and the hard part of ossifying cartilage."

Numerous instances of cartilage and osseous tissue interspersed with benign and malignant neoplasm of various types have been noted. True osteochondromata of the breast are benign but a careful study should always be made to exclude the coexistence of a sarcomatous process. It is a well established fact that tumors of cartilage and bone do arise from skeletal tissue and when so developing are homologous and are usually uniformly composed

of cartilage and bone. When appearing elsewhere as in the breast they are always heterologous and as such are conceived to arise through metaplastic transformation of connective tissue or from misplaced masses of complex tissue. Not uncommonly the cartilage or bone presents itself simply as an incident of structure and is found as minute islands scattered throughout the tissue.

Primarily the formation of these tumors is cartilage and it is the subsequent changes of calcification and ossification which give them their bony character, the cartilage, however, remaining the predominant tissue.

#### CONCLUSIONS

1. *Diagnosis.* The diagnosis is of necessity difficult. The soft breast tissue covering such tumors makes the diagnosis difficult on palpation because many scirrhous carcinomata are very firm. A preliminary excision of the tumor might aid in diagnosis, but it would be difficult to rule out the possibility of sarcoma also being present without complete decalcification. On account of the rarity of these tumors it would, therefore, seem not culpable to do a complete mastectomy. However, an x-ray picture would likely be of aid, particularly with a considerable amount of osseous tissue in the tumor. In this case the diagnosis of carcinoma was made and plates taken for metastasis were unfortunately poor and a later study revealed no suggestive shadow in the area occupied by this tumor.

2. The etiology of these tumors must for the present remain obscure. Many possibilities may be suggested such as:

(a) They may be the result of fetal remnants as advocated by Cohnheim<sup>8</sup>.

(b) They may be the result of trauma, as such tissue is not infrequently found in organizing hematomas. Similar instances are found in the so-called "rider's bone" of cavalymen and the changes occurring in myositis ossificans.

(c) They may represent metastasizing chondromata.

(d) They may be products of tissue metaplasia.

Numerous other theories might be advanced to explain the occurrence of these cartilagenous and bony tumors. However, there has been no work of recent years throwing any special light on their etiology nor was there anything of special significance found in the study of this case. Consequently one can but speculate as to the origin, and the few factors mentioned above undoubtedly explain their

occurrences as well as we are able with our present knowledge.

3. There is no record of such a tumor being associated with carcinoma.

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I wish to express my appreciation to Dr. Eugene H. Pool, Chief of the Second Surgical Division of the New York Hospital, for the privilege of reporting this case.

### CHOLECYSTOGRAPHY AND THE DIAGNOSIS OF CHRONIC GALLBLADDER DISEASE\*

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Some preliminary remarks on the diagnosis of chronic cholecystitis, with which we are chiefly concerned, may not be out of place. No chronic digestive disorder is half so common, and too often are the symptoms vague and varied. Aphorisms, as that the patient is "a female, fat, forty and flatulent," are of piffling value.

Let us recall two instances of chronic cholecystitis as proved by pathologic examination of the gallbladders. A man whose only symptom of consequence was constant burning pain in the right side, and a woman who continually regurgitated food by the mouthful for hours after each meal. This symptom was explained by marked pyloric spasm found at operation. Neither patient had tenderness over the gallbladder region.

The most frequent symptoms are gas, belching and distention. Upward pressure of gas is rather suggestive, and palpitation and disturbance of the heart are not rare. White has recently discussed the difficulties of differentiating gallbladder disease from angina pectoris in some patients.

Pain is of most varied description, ignoring the well recognized colics. It may simulate right-sided pleurisy. It is usually in the epigastrium, sometimes in right side or back, and generally has no time relation to eating. It is often aggravated by large meals, and by acid or fatty foods.

While a history of jaundice is not usually obtained, the presence of an icteric tinge of the conjunctivae is suggestive. Fouchet's test for bile in the blood serum is occasionally of value, and sometimes one can detect bile-tinged serum with the eye, when it is not seen in the foam of the urine.

Tenderness over the site of the gallbladder is the most important single sign but may be misleading, and is often absent for long periods, and may never be discovered. It may be confused with that due to duodenal ulcer. I have frequently observed it in thin persons with marked enteroptosis. Upper right rectus spasm is present in some cases but rarely without gallbladder tenderness.

The most common difficulty in diagnosis is differentiating cholecystitis from duodenal ulcer. Some ulcer cases have not the clear-cut history of pain coming on at a regular time after eating and relief by food or alkalis. On the other hand, some gallbladder patients give an ulcer history. The presence of achylia of course speaks for cholecystitis rather than ulcer.

In the past x-ray diagnosis has not helped much in discriminating cholecystitis from duodenal ulcer in puzzling cases. It has been as often wrong as right in the hands of radiologists. Deformity of the duodenal cap or failure to fill and six-hour residue occur in both diseases. By giving belladonna one may relax spasm of the cap in cholecystitis and repeat the x-ray work. This is tedious and expensive and not usually done.

Nichols of Cleveland and Carman of Rochester report respectively finding by radiology gallstones in 67 per cent (Nichols) and 38 per cent of cases in which they are found at operation. We do not have such success.

Gastric analysis is of some aid in diagnosis. Lockwood, in 100 gallbladder patients, reports that anacidity, normal acid and hyperacidity existed in equal proportions but that, in long standing cases, achylia was the rule. It is a mistake to attach much significance to the finding of occult blood in the feces. The finding is not uncommon in cholecystitis. Its presence should decidedly not determine a diagnosis of duodenal ulcer, when a case is clini-

\* Read before King County Medical Society, Seattle, Wash., Feb. 16, 1925.

cally one of cholecystitis, although I have seen this error made and even in a female.

One should always think of the possibility of a kidney lesion in possible cholecystitis. Nichols states that 30 per cent of their cases of hydronephrosis at Cleveland had been operated on for appendicitis or cholecystitis and advises pyelograms for routine diagnosis.

The average duration of 100 cases of cholecystitis coming to operation was over twenty years, as recently reported by a surgeon in San Francisco. We should at least arrive at a correct diagnosis in less time.

Another very important matter. While it is hard enough to make a clinical diagnosis of cholecystitis before operation, it is not easy, and often impossible in some instances, for the surgeon to detect the disease when he has the gallbladder in his hand. This has happened over and over again in our experience.

In one case a woman, after having what were apparently typical attacks of acute cholecystitis for years, was explored by one of the great living surgeons who removed the appendix but left the gallbladder which he considered normal. My patient returned home and had another acute attack of gallbladder trouble before many weeks which resulted in an empyema of the organ and perforation into the stomach. In two instances I have seen acute attack of gallbladder disease recur before the surgical dressings were removed, following exploration of the abdomen, where the gallbladder appeared normal and was left intact.

A common occurrence is for the surgeon to explore the gallbladder and finding it apparently normal and discovering no other pathologic lesions in the belly, he removes the appendix for chronic inflammation. Instead of lessening the probability of a chronic cholecystitis the very existence of an accompanying chronic appendicitis speaks for gallbladder disease on account of their frequent association.

Some fifteen years ago that medical evangelist, Woods Hutchinson, toured the country preaching that the salvation of the gallbladder patient lay in the extirpation of the gallbladder. Drainage was then the surgical fashion. He showed from the standpoint of comparative anatomy that the gallbladder, like the appendix, was a useless, vestigial organ. That it was absent in many of the higher animals, as in the horse, and that these did not miss it. His deductions, based wholly on scientific

and hypothetical reasoning, proved sound in later surgical practice.

Therefore, I would lay down and stress the dictum that the gallbladder should always be removed during abdominal exploration, when after competent study a diagnosis of chronic cholecystitis has been made, and when no other lesion is found by the surgeon to discredit this diagnosis, and that this rule shall apply even when the gallbladder appears perfectly sound—to the surgeon.

Some exceptions must of course be taken. In liver and pancreatic infections with jaundice, drainage through the gallbladder is usually indicated, and removal of the viscus is postponed until a later date.

A routine removal of the appendix is also in order. The surgeon is often poorly acquainted with the history of his gallbladder patient and does not appreciate its significance, as does the man who has cared for the trouble, and when he exposes an apparently normal gallbladder he seems to forget the history altogether.

I have had many regrets at the non-removal of gallbladders by surgeons and have yet to suffer the humiliation of having a truly normal gallbladder removed. The moral consists in having the diagnostician present at operation to insist if necessary upon the removal of the gallbladder, and to take the responsibility for doing so. One more parting shot at the surgeons. Those who do not recognize a patently diseased gallbladder when they see one.

Early in 1924 Graham and Cole<sup>1</sup> reported x-ray visualization of the liver and gallbladder by intravenous injections of tetrabromphenolphthalein which is eliminated in the bile and renders the liver and gallbladder opaque to the roentgen ray. This method, now improved by the use of the sodium in place of the calcium salt of tetrabromphenolphthalein, has been largely employed in some clinics, notably in Rochester, where several hundred patients have been studied with it by Carman.<sup>2</sup>

The technic lies in the intravenous injection of 4.5 gms of the sodium salt of tetrabromphenolphthalein,<sup>3</sup> dissolved in 40 c.c. of triple distilled water, sterilized over a boiling water bath for 15 minutes. The solution is injected in the early morning into the median basilic vein of the fasting patient in two doses of 20 c. c. each, given one-half hour apart. The patient should lie down and take no food during the day the x-ray work is done, except a glass of milk at noon, and a light non-

protein meal for supper. After the twenty-four hour film is taken on the following morning the patient may resume his usual diet.

Skiagrams of the gallbladder are taken before injection of the dye and on the fifth, eighth, and twenty-fourth hour afterwards. The shadow of the gallbladder normally appears after the fourth hour, and is most marked between then and the twenty-fourth hour. It first appears faint and gradually becomes more distinct, and diminishes in size as it empties. Unpleasant reactions occur in some persons. Five patients had severe reactions in forty of Carman's cases. We have had none in over a dozen people. Carman gives a trial dose of 5 c. c. of the solution intravenously and the rest of the 20 c. c. in five minutes, if there are no unpleasant effects. The



Fig. 1. Gallbladder shadow faint. (After Graham and Cole.)

dye is irritating and should be injected very slowly with all the precautions of salvarsan. If untoward symptoms appear 10 m. of adrenalin solution are given under the skin at once. These are due to vasomotor depression and dilation of the splanchnic vessels, with congestion of the abdominal organs. Dizziness, nausea, vomiting, abdominal cramps and backache may ensue.

It is advisable also to give the patient routinely 40 grains of sodium bicarbonate every three hours for forty-eight hours after the use of the dye. The dye is contraindicated in obstruction of the common

duct, heart disease, advanced arteriosclerosis in the very neurotic.

The shadow of the gallbladder is oval or pear-shaped and should be of uniform outline, homogeneous in density, and varies in size with the filling and emptying of the dye (figs. 1 and 2). Abnormalities are shown by a faint or wholly absent shadow, by delay in filling or emptying, by deformities in contour, by unvarying size and by mottling of the shadow (fig. 3).

Failure of the dye to fill the gallbladder may be due to obstruction of the cystic or common duct by tumors, stones or adhesions, or by the presence of inspissated bile. Mottling of the shadow of the gallbladder may be caused by stones, papilloma or pressure of the bowel. Carman found that in nineteen out of twenty-five cases of gallstones the gallbladder failed to fill with dye. Without dye x-ray



Fig. 2. Shadow of normal gallbladder. (After Graham and Cole.)

showed stones in only six of these patients. The dye showed trouble in 96 per cent of these twenty-five cases of gallstones.

At present the dye technic is very elaborate but bids fair to rival in diagnostic value the use of the x-ray in gastrointestinal patients. Graham and Cole claim to make a correct diagnosis of cholecystitis, even in recent lesions, in 95 per cent of cases.

The absence of shadow is of chief importance. *The less you see the more it means* in skiagrams of the gallbladder with dye, the reverse of ordinary x-ray diagnosis. This is very hard to realize, as

one naturally feels there must be fault in technic when the gallbladder shadow is absent.

Failure of liver function in cirrhosis or hepatitis is theoretically possible, so preventing filling of the gallbladder with dye. But the liver shadow would also be absent.

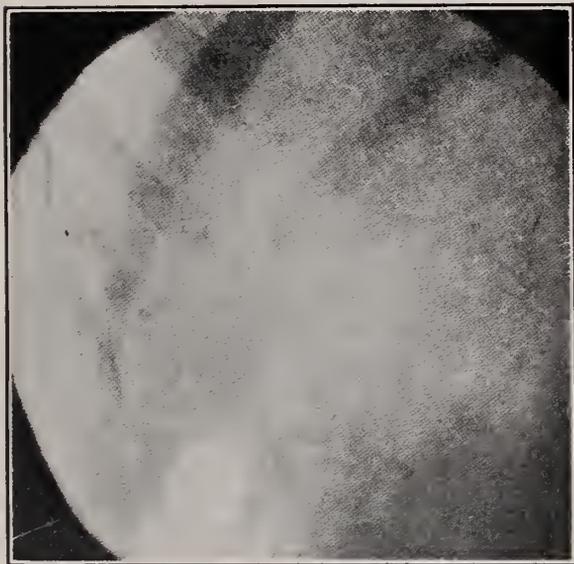


Fig. 3. Shadow of gallbladder absent in all films. (After Graham and Cole.)

The following suspected cholecystitis cases are selected from a dozen or so recently studied at the King County Hospital with cholecystography. The x-ray work was done by Miss Alice J. Cummings.

Man, 47. Trouble began three months ago with pain in right hypochondrium about an hour after eating, relieved by food. Moderate jaundice of three weeks duration. Tenderness over gallbladder, and liver enlarged—about two inches below costal margin. In gallbladder region a hard mass is felt about as large as two fingers and extending directly downward. Trace of free HCl only.

X-ray of stomach. No filling of cap and fuzzy outline of pylorus. Gallbladder shadow after dye faint and large and does not change in size. Mottling of shadow indicating stones.

At operation large tumor of head of pancreas and small growth on pylorus. Gallbladder very large, thick walled, containing many stones. No tumor of gallbladder. Bile inspissated and gallbladder would not empty.

Disease of gallbladder was shown by dye in the faint shadow, unvarying contour and mottling. Note food relief in history. The hard tumor of the gallbladder suggested cancer but only enlargement of the gallbladder was found. The cancer probably was primary at pylorus. Cancer of the head of the pancreas is a common cause of large liver, and gall-

bladder and painless jaundice. This case was complicated with gallstones and cancer of stomach. Hence the pain.

Woman, 51. For five years has suffered from gas, weight in epigastrium, and belching which at first came on regularly at 10 a. m. and 4 and 6 p. m., and was relieved by soda and food. Latterly pain more constant and no relief from food or soda. Palpitation of the heart with gas. No colics, jaundice or vomiting. History of typhoid. Tenderness over gallbladder. Free HCl 60. Occult blood in stool. x-ray of stomach and cap normal, except for some six-hour residue.

X-ray after dye. Shadow normal of gallbladder, except smaller and more rounded than usual. Operation. Gray gallbladder, no stones or adhesions. Appendectomy, gallbladder not removed.

History of typhoid, gas, belching, age, sex, size, color of gallbladder all indicated cholecystectomy. Mistake in not removing gallbladder. Dye gave no light in diagnosis. (Since writing this it seems that the patient has same pain as before operation).

Man, 34. For ten years has had frequent feeling of weight or pressure in epigastrium two or three hours after eating, relieved by food. This has occurred for many weeks at a time with long intervals of ease. Much belching and palpitation, so has been treated for heart disease. No colics or jaundice. Has vomited a few times three or four hours after eating. Present attack has lasted six weeks. Moderate tenderness over the gallbladder and under the right scapula.

X-ray of stomach. Cap does not fill and pylorus fixed. X-ray after dye. No shadow of gallbladder seen. Indicates obstruction to flow of bile into gallbladder.

Operation. Grayish color and thick-walled gallbladder with adhesions to pylorus. Gallbladder will not empty and contains greatly inspissated bile. Here the use of dye very valuable as showing gallbladder trouble and inspissated bile, so that no shadow found by x-ray. History of pain at certain times after eating, food relief and deformity of cap suggest duodenal ulcer. Dr. Cephalu found mucosa of gallbladder largely replaced by scar tissue.

Woman, 26. For two years has had attack of pain in epigastrium radiating to right shoulder on an average of once a month and lasting several days. Pain dull, aching and worse after eating but no relation to kind of food. During attack has fever and vomiting spells. Trouble with gas for years. No colics or jaundice. Free HCl 30.

X-ray. Stomach normal except for fixity of pylorus. Contour of gallbladder after use of dye was somewhat irregular and some mottling of shadow noted. Operation showed grayish white, thick gallbladder with calcified plates in its walls. Massive adhesions to pylorus and stone in gallbladder as large as hazelnut. Bile thick and tarry.

This was clinically a typical cholecystitis, especially with the attacks of fever. The evidence of the dye was extremely satisfactory.

Woman, 36. Has had attacks of colic, vomiting and gas for years with passage of mucus in stools. Had jaundice with first of these seizures. Present trouble began three weeks ago with colicky pain in the right side, fever and vomiting. Some tenderness over the gallbladder and appendix. Free HCl 40. Barium enema showed a spastic colon with fluoroscopy. X-ray after dye showed a large gallbladder emptying slowly. Shadow visible at thirty-six hours. At operation there was found a gray thickened gallbladder without stones.

This case exhibits a common association of

1. Jour. A. M. A., Feb. 23, 1924; *ibid*, May 31, 1924; *ibid*, Jan. 3, 1925. *Annals of Surgery*, Sept. 1924.

2. *Amer. Jour. Roentgenology*, Nov., 1924.

3. Manufactured by Mallinckrodt Chemical Works, St. Louis.

cholecystitis with mucous colitis. Which is the primary disease is doubtful.

Woman, 63. For many years has had attacks of severe pain in right upper abdomen radiating to right scapula and lasting for three or four hours. During past year has had frequent spells of more moderate pain in epigastrium and radiating to back, lasting a few days. The pain has no relation to time of eating or kind of food. Never vomits but sour material often comes up into mouth. Soda gives some relief. Jaundiced eighteen years ago. Some tenderness over gallbladder. Free HCl 40. Barium meal shows some fuzziness of pylorus and gastric stasis and cap did not fill.

No shadow of gallbladder caused by dye at any time. At operation a large grayish white gallbladder was found containing many stones. The history was typical and substantiated by use of the dye.

Male, 66. Had painless jaundice four months ago, cleared up but shortly returned and is now very severe with pruritus. No stomach complaint. Great loss of weight. Liver three inches below costal margin. Free HCl 48. X-ray of stomach showed immovable pylorus, cap filling well and no deformity in contour. Dye showed no gallbladder shadow whatever. At operation gallbladder was found enlarged, with thick white walls and massive adhesions about the bile ducts and pylorus. Many stones were present in the gallbladder. At autopsy a stone was found clouding the common duct. No sign of cancer.

This case exhibits what we have been telling internes for years that a painless jaundice with emaciation of persons of cancer age should be explored. The high free HCl and subsidence of jaundice speaks against cancer but on the whole it is often impossible to distinguish cancer from stone and we have ceased to try. Many lives have been saved by operation. There was no gallbladder history in this case. After proper preparation, as suggested recently by Andres and testing of the renal function, exploration may be done. This patient died of pulmonary edema.

Man, 57. Private patient. Twenty years ago had much same trouble as now (1922) for two years but had then one real attack of severe colic.

At present has feeling of pressure in epigastrium one to three hours after eating, relieved by food and magnesia. Belches a good deal. No vomiting, jaundice or hemorrhage from stomach or bowels.

X-ray diagnosis by excellent man. "Probable duodenal ulcer owing to poor filling and deformity of duodenal cap with active gastric peristalsis." Gave patient belladonna three days, when another equally able x-ray man found gastrointestinal tract normal. Diagnosis on examination blank at time reads: "Cholecystitis, 75 per cent, duodenal ulcer, 25 per cent."

A year later the patient fainted from an intestinal hemorrhage. A few weeks after he was explored at Mayo Clinic, and No. 4 cholecystitis and chronic appendix found. No sign of ulcer. Patient well since. Case shows difficulties of differential diagnosis between ulcer and cholecystitis.

## RELATION OF DENTAL INFECTIONS TO HEALTH AND DISEASE\*

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(Concluded)

Probably no single contributing factor to focal infection of dental origin is so frequent as is overload, which may take many forms, none of which, however, are more potent than the physical stress of pregnancy and lactation. Given an individual who is susceptible and an overload of pregnancy, influenza, and a source of dental culture, such as a chronically infected tooth, the probability of the development of an arthritic process becomes very great and no mother so affected can give to her offspring the proper calcification of teeth and bones to insure its maximum efficiency either in childhood or later life. We too often think of the care of the mother in terms only of her physical comfort. As important as that factor is, we will be doubly concerned that she shall not have a source of focal infection competent to develop an arthritic process, when we realize that her handicap is not limited to her own body in its complications, but handicaps the new life which to her is more sacred than her own. I am familiar with the details, by intimate personal acquaintance with many bedridden cases of deforming arthritis because of my effort to assist them in securing improved health, and it is a most lamentable fact that the majority of them furnish a history that demonstrates that the process began during pregnancy, at which time they were carrying infected teeth.

In the foregoing I have discussed only two types of systemic lesions which may readily be related to dental infections, and I could similarly present the case from a standpoint of the degenerative diseases affecting the nervous system, both general and central, kidneys, digestive tract, pelvic organs, skin, eyes, etc., which time does not permit. For example, some oculists attribute 75 per cent of eye involvements of most frequent types to dental focal infections. Some even make special lesions, such as arthritis, 100 per cent of dental infection origin. In the insanities we find an abundant literature as well as a large personal experience, indicating that a great many cases of both mild and grave cases of psychoneurosis have their chief contributing factor in the development of the onset in dental focal infections. You are doubtless familiar with Dr. Cotton's work in the state asylum of New Jersey,

in which he has found focal infection to be the most important contributing factor, and of which the dental focal infections are by far the most frequent.

If it were possible to determine in any community or in any individual the entire total effect of dental infections on all phases of vital efficiency as well as longevity, we would find a sum total that would amaze even the most sanguine. I will try to visualize this for you in a general way only, for it is clearly impossible to give specific data. Dr. Louis Dublin, statistician of the Metropolitan Life Insurance Company, than whom there is probably no higher authority on matters of life extension, has recently presented in the Harvey lecture before the New York Academy of Medicine a new analysis of the available vital statistics.

He states that the average length of life in this country today is 51.49 years, which is known as the life expectation, which is 12.5 years more than it was seventy years ago, and that in the state of Massachusetts during the past sixty-five years there has been a gain in life expectancy of 15 years. If we assume 70 years of age to be a fair maximum that we should work to, it will be noted that we are approximately 18.5 years short of that point, and it is of particular importance that he, as others, has stressed the fact that diseases of the heart and kidney are not declining, regarding which he is reported in *Hygea* for February as follows:

"In analyzing the various attempts that have been made to prolong life and to decrease mortality at various age periods by the control of infectious disease and by periodic physical examinations, Dr. Dublin concludes that it is possible to attain large results in increasing life expectancy in the future. Although diseases like tuberculosis have declined greatly, the conditions that reflect personal hygiene and the general care and use of the human body, such as heart disease, Bright's disease, and other diseases affecting middle life, are not declining."

That this is one of the most important problems confronting preventive medicine today, was strikingly brought out by Dr. Livingston Farrand, President of Cornell University, in his address on the Nation and Its Health, before the American Association for the Advancement of Science at its Boston meeting a year ago. Science, in abstracting his address, stated:

Dr. Farrand reviewed the progress of public health work in this country and pointed out that since 1870 the average length of life has been increased by fifteen years, that marked reduction has occurred during this period in infant mortality and in mortality due to tuberculosis, typhoid, smallpox and many other diseases. The efforts of health workers and organizations have, however, been unable thus far to prevent increases in certain unconquered diseases, such as

cancer and diseases of the heart and kidneys. The most outstanding problem at present concerns the control of the degenerative diseases of later life, an increase in mortality from these being an inevitable consequence of improvements in the control of diseases of infancy and youth."

We find, then, that since the epidemic infectious diseases have been controlled, our hope for further improvement lies almost wholly in our learning to control the so-called degenerative diseases. Dr. Chas. Mayo has stated in his address before the New York State Medical Society, as published in the *Dental Cosmos* of November, 1922:

"Probably 90 per cent of deaths are due to infective diseases and the other 10 per cent to accident, failure of development before birth, and the degeneration after birth, and so on."

Where do these infections come from? He and many others have stressed the fact that these infections, which strike the final blow, come from focal infections which the individual is carrying at the time of the stress or overload. My intensive researches for the past two decades have been concentrated quite largely upon the problem of determining the role of dental sepsis in producing these contributing infections. In this work we have used in the last three and one-half years about 1300 rabbits besides a large number of other animals. This work has been so organized that every department has been dovetailed into the others in such a way as to bring about the maximum possible efficiency and cooperation of a staff ranging up to eighteen individuals. This has included the intensive physical, clinical, and laboratory study of thousands of patients. The results compel the conclusion that dental focal infections constitute a very important factor in the etiology of the degenerative diseases, and in very many instances the evidence seems to compel the conclusion that the dental infection was the all-important factor. I shall present illustrations of various types of degenerative diseases and submit evidence which has indicated the importance of the dental source.

But this raises the question as to why some individuals with infected teeth and with unusually large quantities of dental infection have no known systemic involvements, and others with apparently much less dental infection, or none at all, do have particular systemic involvements. These researches have demonstrated that the most important factor next to that of the invading organism (and perhaps, we should say even more important), is the factor of specific defense of the individual's body against invasion for every organ and tissue of that body. In order to determine this factor I have made de-

tailed studies of over 1400 individuals and their families to determine the presence or absence of rheumatic group lesions of the types that our experience indicated might be related to focal infections, such as dental focal infections. Necessarily, it was impossible to get complete data in all cases and, accordingly, we have selected 681 family charts as being sufficiently complete to justify making deductions.

This work has shown that individuals can be divided readily into three groups with regard to their susceptibility or absence of susceptibility to rheumatic group lesions. I have termed these groups: susceptibility *absent*, susceptibility *acquired*, and susceptibility *inherited*. When we add all the rheumatic group lesions in a particular family we will have those of the patient, the brothers and sisters, the father and mother, the father's brothers and sisters, the mother's brothers and sisters, and the four grandparents, which makes on an average fifteen individuals. We have taken as the rheumatic group lesions for classification: Tonsillitis, rheumatism, heart, neck, nerves, internal organs, and special tissues, as units. The total number of all of these lesions in all the members of the family classified as susceptibility *absent* is 4.2; in the family with susceptibility *acquired* it increases to 6.8; and in the group classified as susceptibility *inherited* to 15.5. In this grouping we have only included the severe expressions such as would destroy life or incapacitate the individual. When we include both severe and mild expressions of the affections we find the figures for susceptibility *absent*, 7.08; for susceptibility *acquired*, 10.7; and for susceptibility *inherited*, 21.11. It will be noted, then, that in families with an inherited susceptibility there is three times as much danger of systemic involvement as in those with an absent susceptibility.

Let us now study this inherited group with regard to the possibility of focal dental infections. If we divide individuals into groups as follows: Absent, acquired, inherited, and the latter into four divisions, one side mild, one side strong, two sides mild, and two sides strong, we have the remarkable result, when we study the relation of dental caries to their problem, that in general that lesion increases directly in proportion with susceptibility; whereas, the percentage of individuals studied, that were classified as having an absent susceptibility, showed 40 per cent, those with an acquired susceptibility 80 per cent, inherited one side mild 67 per cent, one side strong 80 per cent, two sides mild 93 per cent,

and two sides strong 93 per cent. Or otherwise expressed, when we study the relation of caries to susceptibility in 681 individuals we find that 73 were classified as *absent* susceptibility, 130 *acquired* susceptibility, and 327 *inherited* susceptibility. The balance did not have caries.

Another grouping of individuals, for which 100 individuals were selected, developed the same general information but with slightly different figures:

Having dental caries	
Dental patients with no developed susceptibility .....	51 per cent
Dental patients with an apparently acquired susceptibility .....	91 per cent
Those with a susceptibility and with one or both parents acting as carriers only	81 per cent
Those with a susceptibility and with only one side of ancestry, including that parent, involved .....	88 per cent
Those with a susceptibility, including both sides of ancestry and both parents involved .....	100 per cent

When we relate this factor to rheumatic group lesions, which constitute a large part of the so-called degenerative diseases, we get this remarkable result, that when we select fifteen typical families for each of the six groups—absent, acquired, inherited one side mild, one side strong, two sides mild, and two sides strong—the number of severe lesions in the entire fifteen families is as follows: 16, 63, 144, 258, 227, 483; or when we include the mild as well as severe expressions, the figures become: 31, 96, 201, 338, 308, 754.

It will accordingly be noted that susceptibility to the rheumatic group lesions increases at a greater rate even than the susceptibility to caries, and the susceptibility to caries is so dominant a factor in those with an inherited susceptibility that in strongly inherited groups it is from 90 to 100 per cent. Now when we consider that of these individuals with so marked a tendency to caries a very large percentage will at some time (and with many of them at all times) have present in their bodies pulpless teeth, potentially capable of producing any of these lesions, we have an association of causative factors that is final and absolute except for one factor, namely, the demonstration that such teeth are potentially capable of producing, or have produced, the lesions in question. For this latter point, which is the last phase of this question to be clearly demonstrated, we will furnish (by lantern slides) as evidence these two factors: the capacity of the organisms selected from the dental focus to produce the lesion in question which that host presented with, and the improvement in the host's health by the removal of the dental focal infection.

For this latter I will use illustrations, the sum total of which evidence seems to leave no possible escape from the conclusion that dental focal infections constitute by far the most important source and by far the most important causative factor in the development of the degenerative diseases of the rheumatic group.

Of the other degenerative diseases, such as tuberculosis and cancer (if we may consider them as such), our researches have demonstrated clearly certain data which throw a new light upon the nature of those disturbances, though, let me state in anticipation of your making any mistaken conclusions, we do not have evidence that either tuberculosis or cancer are directly caused by focal infections. In our extensive tabulations, in which we have found it relatively simple to classify people according to the types of their dental pathology, we do find that, where cancer has appeared in the family and in the studied individuals, in about 75 per cent of the cases it has been in one group classification, namely, those with an acquired susceptibility. Time does not permit of a discussion of this point here except to state that there is some evidence, as I have brought out quite clearly in the chapter on "Precancerous Conditions" in my recent reports, that focal infections may produce sensitized states in tissues, which may take on a distinctly pathologic form and which, there is some evidence suggesting, may become precancerous conditions.

With regard to tuberculosis, a very important group of new data has been developed in these researches, namely, that patients who prove to have a poor capacity for combatting tuberculous infection are in very large percentage in the group with an active capacity for decalcification as expressed in periodontoclasia, or so-called pyorrhea alveolaris, which patients do not in this condition tend readily to have calcification processes develop within their tissues. I have studied this matter in tuberculosis institutions and find much evidence in support of my experimental data and very little contraindicating it. It is entirely possible, and indeed probable, that the establishment and continued presence of extensive gingival infections aggravate this very condition and in that way decrease the individual's specific defense. I have discussed this at length in the chapter on "Respiratory Tract."

Since dental infections constitute so important a factor in health conservation, its prevention is a problem second to none in the interest of humanity of today, and a problem which has an increasing

imperativeness in the communities with the so-called highest intelligence, since with our modern methods of preparing foods and ideas regarding its selection, as generally practiced, dental infections are many times more prevalent than in the more primitive state. This leads to the question as to how efficient oral prophylaxis, as practiced, really is. In this regard two items are outstanding:

The first is that enormous betterment is achieved by the use of even the methods and knowledge at present available. To be more specific, it is probable that a small percentage, possibly 10 per cent, of the people of the United States have reduced their dental infection 50 per cent. Personally, I am very sure this is too high, but granting it, it means that only one-twentieth of the dental infection is being removed or prevented. Immediately we ask ourselves: What does this mean? Some of the factors involved are easily discerned. The most important, of course, is ignorance, for the knowledge that is available is but poorly practiced.

A second factor is the delay in the development of an adequate basis for judgment in the minds of the members of the healing professions. I think no phase of this latter problem is so convincing and pathetic and almost disheartening, namely, the lack of oral prophylaxis as a part of the health program for invalids in our institutions under medical and dental care. It is almost inconceivable that with the knowledge available at this time, many hospitals do not have any routine dental service. Notwithstanding that it has been demonstrated that in those hospitals that do have a proper organization for the identification and elimination of dental focal infections and a staff of periodontists to maintain a relatively clean condition of the teeth and mouth, the average stay of the patients is sufficiently shortened to reduce the expense to the community for maintenance of the hospital in an amount which is several times greater than the expense for the establishment and maintenance of that service.

Another evidence of the delayed recognition of the importance of these factors is clearly demonstrated by the number of members of the healing professions who have in their own mouths teeth potentially capable of doing them serious harm, and who, we must assume, do not recognize that danger or they would not be there; and this is not strange when we realize the slight importance which these problems must be assumed to have, as judged by the amount of effort that is being made to acquire new light through adequate research. Nor is this

a problem that concerns only or primarily the members of the healing professions. It should not be up to them to furnish the money and the institutions with which to carry on adequate research on these dental problems.

In most any audience or group of individuals it might with considerable correctness, as based on mortuary statistics, be stated just about the number of individuals of the group who would die of the special diseases. For example, we might safely assume that the people of this audience will many of them have their lives foreshortened and their comfort and efficiency, even during their period of life, reduced very materially below the possible maximum span of life that would even be possible, notwithstanding the bad management of our lives in the past. If we knew, for example, that 5, 10, or 15 per cent of the individuals here would die of each heart, kidney, digestive tract, nervous system, and special tissue involvements, with approximately 10 per cent by accident, and if we could know just which group we would likely be in, would we not make some adequate effort to see that that misfortune did not strike us?

We can understand the helplessness of animal and bird life to plan for defense against their greatest enemies. We can even understand this for the primitive tribes in undeveloped civilizations, but it is hard to feel that this generation of Americans will go complacently along and not adequately try to save its own generation or the next for which it is so directly responsible and which it should love as dearly as itself. Surely the shell of civilization is not very thick, for all that is needed is a mere fraction of the expenditure that is made for luxuries for passing amusement, which, expended intelligently in research work in dental problems, would move forward the time when this knowledge would conserve human life and efficiency by generations. Instead of a handful of individuals struggling with a problem a thousand times too great for them to handle alone, and with all too meagre facilities and no adequate financial support, and even without cooperation, there should be millions of dollars available for the engagement and training of hundreds of skilled workers, working under conditions that would conserve their health and maintain efficiency. I have not the slightest doubt that for each million dollars that would be expended there would be a million years added to the sum total of efficient and comfortable life to the citizens of America.

## THE EFFECT OF ANESTHESIA ON THE KIDNEY\*

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The common occurrence of abnormal products in the urine after anesthesia led us to study their etiology. In the first place the laboratory charts of two hundred and eighty cases with normal preoperative specimens of urine were reviewed by one of us at the Peter Bent Brigham Hospital. The post-operative specimens of urine of these cases showed the presence of albumin, sugar and casts in a fairly high percentage of cases but too few cases were analyzed to be of any statistical value. The presence of acetone, diacetic acid and blood cells which are found quite commonly after anesthesia were not tabulated.

In order to throw some light on the cause of these abnormal products in the urine, blood sugar determinations were made before and at intervals during anesthesia, to see if any relation existed between the elimination of sugar in the urine and concentration of sugar in the blood. Blood urea nitrogen determinations were made before and at intervals during anesthesia, together with determinations of the urine urea, in order to determine the effect of anesthesia on the rate of urea excretion.

### GLYCOSURIA AND HYPERGLYCEMIA DURING ANESTHESIA

In explaining the etiology of glycosuria during and following anesthesia, it was necessary to determine whether a fall in the blood sugar occurs. The results of the blood sugar determinations are given in Table 1. In all cases there was a hyperglycemia but the elevation of the blood sugar rarely reached the threshold value for glucose. The threshold value for glucose is usually given as 0.17 per cent but this may vary under certain conditions and in different individuals. How the kidney holds back sugar at its normal concentration in the blood and prevents its appearance in the urine has not been definitely determined.

Two theories have been advanced to explain this. According to one hypothesis the hemic glucose is in a free chemical state but the renal cells possess physical or chemical properties which render them impervious to such amounts of sugar as occur normally in the blood. The second view holds that the

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TABLE I.  
BLOOD SUGAR

No.	Nature of Operation	Length of Anesthetic	Urine Before Operation	Positive findings in Urine after operation	Blood before Anesthetic			
					1	2	3	4
20058	Myomectomy, appendectomy	75 min.	Negative	Albumin, acetone, diacetic, R B C, W B C	BS—85	BS—114	BS—102	BS—108
27208	Gastroenterostomy	55 min.	Negative	Albumin, acetone, diacetic, R B C, W B C	BS—80	BS—123	BS—111	BS—130
27239	Exploratory, laparotomy	15 min.	Negative	Albumin, acetone, diacetic	BS—70	BS—125	BS—70	BS—86
27281	Sarcoma of neck	15 min.	Negative	Albumin	BS—77	BS—107	BS—92	BS—70
27519	Cholecystostomy, gastroenterostomy	70 min.	Negative	Albumin, acetone, diacetic, W B C, few hyaline, granular casts	BS—71	BS—151	BS—138	BS—121
27282	Appendectomy, colopexy, omentopexy	65 min.	Negative	Albumin, acetone, diacetic, R B C, W B C, few hyaline granular casts		BS—177	BS—125	BS—109
27338	Exploratory laparotomy	75 min.	Negative	Albumin, acetone, diacetic, W B C	BS—63	BS—172	BS—120	BS—86.9
27382	Excision blue dome cyst of breast	25 min.	Negative	Albumin, W B C	BS—80	BS—108	BS—100	BS—92

Normal individuals. Table showing hypoglycemia during and following anesthesia. Ether anesthesia. Sugar in milligrams per 100 c.c. of blood.

TABLE II.  
BLOOD UREA

No.	Nature of Operation	Length of Anesthetic	Urine Before Operation	Positive findings in Urine after operation	Blood before Anesthetic			
					1	2	3	4
27385	Osteosarcoma	85 min.	Negative	Albumin, acetone, R B C, W B C	BU—14.25	BU—15.3	BU—20.1	BU—16.9
27193	Gastroenterostomy, appendectomy	85 min.	Negative	Albumin, acetone, W B C	BU—10.6	BU—11.1	BU—13.6	BU—15.7
27006	Goiter (Under anesthetic of N <sub>2</sub> O & O <sub>2</sub> )	55 min.	Negative	Albumin	BU—16.5		BU—19.5	
27319	Varicose veins		Negative	Albumin, acetone, diacetic, R B C, W B C	BU—21	BU—27.15		BU—18
27457	Bilateral salpingectomy	60 min.	Negative	Albumin, acetone, diacetic, R B C, W B C	BU—19.5	BU—22.5		BU—21
27473	Cancer of breast	80 min.	Negative	Albumin, acetone, diacetic, W B C	BU—18	BU—21.4		BU—21
27489	Gastroenterostomy	60 min.	Negative	Albumin, Occ. hyaline granular casts	BU—12.45	BU—28.5	BU—24	BU—31.5
27466	Cancer of transverse colon	45 min.	Negative	Albumin, acetone, diacetic, R B C, W B C, few hyaline granular casts	BU—16.5	BU—19.5		BU—15.7
27502	Repair of right inguinal hernia	60 min.	Negative	Albumin, acetone, diacetic, R B C	BU—22.5	BU—24.0	BU—26.6	BU—26.2
27032	Closure of fecal fistula	70 min.	Negative	Albumin, acetone, diacetic, R B C, W B C	BU—15.6		BU—17.8	
27474	Appendectomy, salpingectomy	100 min.	Negative	Albumin, acetone, diacetic, R B C, W B C	BU—16.5	BU—22.35	BU—24	BU—18
27601	Ant. and post. colporrhaphy, perineorr-	100 min.	Negative	Albumin, acetone, R B C, W B C, Sugar	BU—15.75	BU—19.2	BU—20.25	BU—18.75
27605	Undomg. happy gastroenterostomy	100 min.	Negative	Albumin, acetone, diacetic, R B C, W B C	BU—17.4	BU—19.4	BU—19.95	BU—18.6

Normal individuals. Table showing increase of Blood Urea Nitrogen during and following anesthesia. Blood Urea in milligrams per 100 c.c. of blood.

renal impermeability to glucose is due to a hypothetical colloidal combination of the glucose. A better idea of the pathologic physiology of this condition can be obtained by briefly reviewing the outstanding principles in the modern theory of the secretion of urine. According to this theory of the secretion of urine, filtration which occurs through the glomeruli depends upon the difference in the pressure on the two sides, character of the membrane, and the nature of the fluid to be filtered. The filtrate is altered as it passes along the tubules by the absorption of some of its constituents. Certain constituents of the filtrate, the threshold bodies, are taken up by the tubules and returned to the blood, e. g., sugar, chlorides, etc. Other constituents of the filtrate, the nonthreshold bodies, are not absorbed as they pass along the tubules but must pass into the urine once they get beyond the glomeruli, e. g., urea, etc. The threshold bodies pass into the urine only after they reach a certain concentration in the blood but the threshold may vary under certain conditions and in different individuals. The classification of glycosurias is based upon this.

There are thus two types of glycosuria. One in which the renal threshold is lowered and glycosuria occurs, notwithstanding a normal concentration of sugar in the blood, renal glycosuria. The usual forms of glycosuria which are associated with hyperglycemia are due to this increased amount of sugar in the blood. The excretory mechanism of the kidneys is not at fault in these cases. The glycosuria following anesthesia is apparently due to hyperglycemia, although the blood sugar only rises to the threshold value occasionally. This hyperglycemia, although mild, persists for several hours. The rise and fall in the blood sugar which results from absorption of carbohydrates from the alimentary tract has been described by Folin, but the hyperglycemia which results after anesthesia is not due to this cause.

Herter and Richards were the first to show that epinephrin causes hyperglycemia and glycosuria. The fright which precedes operation will not account for the prolonged hyperglycemia for, according to Cannon and others, the hyperglycemia which follows emotional changes is not sustained. The work of MacLeod shows that stimulation of the great splanchnic nerve causes hyperglycemia but if the hepatic nerves be severed this does not occur.

Dewes' work is limited to the abdomen. He finds that during local or general anesthesia the hyperglycemia resulting is due to stimulation of the branches

of the sympathetic nerves. In diabetes mellitus, Fitz believes that ether causes a hyperlipemia, due to the solvent action of the blood ether mixture on the fat of the tissues. There is an immediate rise in the blood sugar, due to the transformation of glycogen into glucose under the stimulation of asphyxia. Medes and McClendon have studied the effects of anesthetics upon cells. They found that ether up to a certain concentration stimulates plant activity, but higher concentrations produce a diminution in oxygen intake and an increase in the output of carbon dioxide, producing a degree of plant asphyxiation.

A certain degree of acidosis accompanies anesthesia, as shown by the common occurrence of acetone bodies in the urine. We have made a limited number of determinations of the carbon dioxide tension of the blood but are not ready to report this at the present time.

We believe that the hyperglycemia following anesthesia is due to a discharge of the glycogen reservoirs. We have not been able to satisfy ourselves that any single factor precipitates the conversion of glycogen into glucose.

#### BLOOD UREA AND URINE UREA DURING ANESTHESIA

Urea is formed from the proteins which are absorbed from the gastrointestinal tract for the most part as simple aminoacids. Folin and Dennis showed that deamination and urea formation do not occur to any great extent during the process of absorption through the walls of the intestine or passage through the liver. Moreover, the same experiments and additional ones showed that the liver was not a specialized locus for deamination and urea formation. While the liver acts as a buffer to the rapid increase of amino-acids in the blood, the absorption by other tissues is not so rapid but continues gradually. The formation of urea is a function of the cells in general, especially the muscles.

After a heavy protein meal Folin and Berglund showed that the amino-acid content of the plasma rose over 100 per cent during the first two hours, while the urea nitrogen showed very little change but actually fell slightly. During the next hour the amino-acid nitrogen began to decrease, while the urea nitrogen rose, and continued above normal even for eight hours after the ingestion of gelatin. The urea nitrogen of the urine did not begin to rise until after a rise in the blood urea nitrogen occurred.

Considerable work has been done concerning the factors which control the rate of urea excretion. The

experiment just quoted shows besides other facts how the urine urea rises after a rise in the blood urea. Drury has shown that the rate of urea excretion continues to increase in direct proportion to increases in blood urea concentration, even when the concentration rises to over 700 mg. per 100 c.c. Addis and Drury have studied the effects of various other factors than blood urea concentrations on the rate of urea excretion. They found that the rate of urea excretion is increased by the administration by mouth of milk, caffeine and glutamic acid and is decreased by exercise, pituitrin and large amounts of adrenalin. These alterations in the rate occur independently of changes in blood urea concentrations. The same authors have shown that a change in the urine volume has no demonstrable effect on the rate of urea excretion.

**TABLE III.**

**BLOOD AND URINE UREA**

Before, during and after operation.

No. 27869.

Urine before operation—Occ. W.B.C.

Urine after operation—Alb. — tr. Diacetic — acetone, casts granular, R.B.C., W.B.C.

Length of anesthesia—90 minutes.

Operation of Ovarian cyst. Appendix.

Time	Blood	Urine
7:30 AM		25.6 gm/1
8:30 AM	14.55 mg/100 cc	
11:40 AM	21.1 mg/100 cc	Anesthetic started 10:55 am Operation started 11:10 am
12:05 PM		14.1 gm/1
1:00 PM	18.15 mg/100 cc	Operation finished 12:25 pm
1:50 PM		10.6 gm/1
3:30 PM	17.4 mg/100 cc	
3:50 PM		10.4 gm/1
5:40 PM	16.2 mg/100 cc	
5:55 PM		8.8 gm/1

Normal individual. Table showing elevation of blood urea and decrease of urine urea during and following anesthesia.

We believe that the increase in the blood urea and the decrease in the urine urea (Table II, III and IV) is due to a decreased rate of urea excretion. No attention was paid to Ambard's Coefficient, since the workers at the Harvard Medical School have shown that it is not based upon any scientific data.

The usual explanation for the appearance of casts in the urine can be briefly stated. They either arise from the albumin which passes through the glomeruli and later coagulates in the tubules or from

**TABLE IV.**

No.	Nature of Operation	Urine Urea	
		Before Anesthetic	After Anesthetic
27006	Goiter	13 gm/1	9.4 gm/1
27457	Bilateral salpingectomy	18.6 gm/1	8.6 gm/1
27473	Amputation of breast	6 gm/1	11.8 gm/1
27489	Gastroenterostomy	24.3 gm/1	15.5 gm/1
27032	Closure fecal fistula	13 gm/1	9 gm/1
27474	Appendectomy. Salpin-	10.8 gm/1	7.5 gm/1
27601	Ant. and post. colporrhaphy. Perineorrhaphy	13.2 gm/1	8.2 gm/1

Normal individuals. Table showing grams of urine urea per liter before and after anesthesia. Urine collected a few minutes before and shortly after operation. Second specimen obtained by catheter. Ether anesthesia except in case 27,006 which was gas-oxygen.

the cellular detritus derived from the epithelium lining the various tubules which has undergone retrograde changes and sloughed off into the lumen of the tubules are formed. The common occurrence of casts following anesthesia must have been noticed by all who have examined postoperative specimens of urine.

Albumin is the most common abnormal constituent of the urine after anesthesia. Albumin occurs in the urine either as a result of diseases of the urinary passages or functional or organic changes in the kidneys. In the female vaginal secretions or discharges may contaminate the urine. Inflammation or hemorrhages from the various causes in the urinary passages will produce albumin and cells in the urine, but the albumin may be in small amounts, when compared to the large number of leucocytes and red blood cells. The albuminuria from functional or organic diseases of the kidneys is in direct antithesis to this. Normally albumin and globulin will not pass through the glomeruli. The albuminuria following anesthesia is either due to an increase in the interstices between the cells or injury to the cells of the glomeruli. Limited retrograde changes or necrosis of some of the cells of the glomeruli may occur, but this is followed by rapid regeneration as soon as the injurious agent is eliminated. The albuminuria and appearance of casts soon vanish.

**SUMMARY**

1. A well sustained hyperglycemia and frequent glycosuria occur, following anesthesia.

2. An increase in the blood urea and a decrease in the urine urea occur, following anesthesia.

3. Since the albumin and casts disappear from the urine a few days after anesthesia, one concludes that the damage to the kidney is a temporary affair, leaving no residual or progressive damage.

4. The constant hyperglycemia and acidosis which accompany anesthesia suggest the use of insulin.

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## SOME MISINTERPRETATIONS OF X-RAY PLATES AND FLUOROSCOPIC SCREENS\*

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Technic and interpretation play an important part in all arts and sciences and in many other lines of endeavor. The master mechanic, the artist and the prima donna must become thoroughly conversant with all the fundamentals and the ordinary features of their vocations. This much is requisite, but their work can not be considered as either scientific or artistic until it has acquired something beyond the fundamental and the ordinary.

It matters not what the nature of the work may be; these two factors stand uppermost in its perfect accomplishment, namely, technic and interpretation. The musician who excels in his art is one who, through practice and experience, learns to impart to music the proper interpretation. The success of the artist, the mechanic and the professional man is gauged by the manner in which he makes his interpretations and the way in which he does his work.

What can be said regarding that medical man classified as a roentgenologist? Is he merely a "picture-taker" who makes pictures of bones, chests and stomachs? Does the success of his work, like that of a photographer, depend mainly upon the nature of his technic, or does the matter of interpretation play the more important part?

It is obviously true that the technical side of roentgenology is very important. To get the least amount of distortion, the greatest degree of detail, the desirable amount of contrast and the proper radiographic density demands real skill, but far more important is the ability to correctly diagnose what is depicted upon the plate. There are some conditions which are very easily diagnosed. Even the layman can point out fractures of bones, where the fragments are considerable separated or a foreign body implanted in the tissues, but as one familiarizes himself with x-ray work in general, these facts gradually become obvious, that all conditions do not give as clear-cut evidence as broken bones and foreign bodies and that there is much in roentgenologic work which is mystifying and perplexing.

Many seem to believe that x-ray work differs only from ordinary photography in that it goes below the

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surface and takes a picture of the deeper parts. This is far from true. No high degree of intelligence or special study or experience is required to recognize what is seen on a photograph, and there are too many who seem to believe that no special experience is necessary to read an x-ray plate. But nothing is further from fact. Whenever a person, inexperienced in x-ray diagnosis, attempts to define what is outlined on a plate, he frequently discovers much that is not depicted. He often sees what he himself desires to see, or someone else desires that he should see, and the important features that would be obvious to the experienced skilled worker are overlooked. The result is an incorrect diagnosis.

It should be the aim of every conscientious professional man to make a correct diagnosis in every case wherein it is possible, and when he calls into service the commercial x-ray photographer, has he used the best means at hand to arrive at a correct diagnosis? Can he feel that he has acted for the best interests of his patient? This can not be truthfully answered in the affirmative. Example after example can be cited where patients have not received a square deal because this procedure has been used, and it shall be the purpose of this paper to point out a few of them.

All sorts of misinterpretations of injuries of the bones of the extremities are being made by men inexperienced in the reading of x-ray plates. Bætjer has called attention to the fact that bone injuries in children are repeatedly misinterpreted. He urges every scientific man to familiarize himself with what he should expect in normal bones of a child. The tyro and the inexperienced repeatedly fail to take into account the epiphyses of bones. It has come to my attention that the commercial x-ray photographer and his collaborators not infrequently make a diagnosis of a transverse fracture, when in reality there is depicted upon the film that space of increased radiability between the shaft of the bone and its epiphysis, an absolutely normal condition. The doctor who sent the patient concurs in this diagnosis with frank praise for that wonderful phenomenon, the x-ray. In this condition the epiphysis is separated from the shaft by a considerable length of cartilagenous tissue. A few years later in life the epiphysis finally becomes attached (yet insecurely) to the shaft and, if at this time the bone meets with an injury, the epiphysis may become detached at this weakest point. Here, again, a diagnosis of transverse fracture is often made, when in reality it

should be correctly diagnosed as an epiphyseal separation.

Did you ever see a Colles fracture in a boy or girl under the age of seventeen years? If you have, it would be interesting to study the x-ray plates and the records of that case more closely. Many of them have been misdiagnosed. This mistake in diagnosis might be of little consequence, if the treatment of a transverse fracture and epiphyseal separation were identical, but in many instances it is not.

One of our local roentgenologists recently called our attention to how often the man inexperienced in the reading of x-ray plates misinterprets dislocations of the bones of the wrist, and I desire at this time, to quote from his statement. "A few weeks ago Dr. X referred one of his patients to a layman for an x-ray examination of the wrist. Fracture of the radius was diagnosed and treated, but a disabled wrist resulted. Another doctor was consulted by the patient and he was then referred by this doctor to a professional x-ray man, who recognized a dislocated semilunar." Every few days similar cases come to our attention. Are you sure some of these cases are not yours? One patient remarked that she "might as well go to a layman in the first place if the doctors had to depend on laymen to try to find out what was the trouble with her." The author of these remarks closes with this timely admonition. "Let us raise the standards and decrease the medical knockers by referring our patients to careful, conscientious and skillful professional men rather than to self-styled qualified assistants or to boy or girl x-ray 'experts.'"

To see a barium meal pass down through the esophagus into the stomach and out of this organ into the intestines is an interesting spectacle, but should never be attempted by anyone not specially qualified. The tendency of the unscientific man is to try to tally up with the provisional diagnosis made by the doctor who sent him the case and in many instances he does so. Many of the roentgenologic signs are deceptive and it would be unfair to say that a given diagnosis is dishonest, but one can say without danger of refutation that no layman can give a skillful and scientific diagnostic report of gastrointestinal conditions. Spasmodic contraction in all portions of the intestinal tract are most misleading and give rise to all forms of incorrect diagnoses. Stricture or carcinoma of the esophagus, malignancy or ulcer of the stomach, or ulcer of the duodenum are all examples of errors such as these, when in reality no pathology may exist. Pressure

defects also cause many errors. The spinal column pressing upon the stomach during the time an exposure is being made may cause a very irregular stomach outline, and a very ominous diagnosis is made as a consequence by anyone not knowing the cause.

Only very recently a patient came to me very much alarmed, stating that an inoperable cancer of the stomach had been found and that she had only a short time to live. It was my pleasure to assure her that she need have no such fears for, although the stomach emptied in a most precipitous and peculiar manner, and although the pylorus was very ragged and irregular in outline and the duodenal cap could not be visualized, the whole picture was very easily interpreted when it was seen, almost at a glance, that the stream of barium was not passing through the pylorus and the duodenum but instead was escaping through a patulous gastroenterostomy opening. Her surgical history proved that she had been operated upon a few years previously and that a gastroenterostomy had been done. This artificial opening accounted for the peculiar roentgenologic manifestations and such a hopeless outlook on life expectancy should not have been given.

Calcified mesenteric lymph nodes, phleboliths and fecoliths have deceived many into believing that they were dealing with renal calculi or gallstones, and undissolved cathartic pills composed of blue mass, or other metallic purgatives may be the cause of mistaken diagnoses.

The examination of the chest from a roentgenologic standpoint offers one of the most difficult problems with which a roentgenologist has to deal. People in middle life, enjoying the best of health and in whom you know there is no active lung pathology, frequently show shadows and markings that would signify marked disease, if the patient were ten or fifteen years younger. One must learn to distinguish these scars of former battles from the markings of active disease. The x-ray plate of a normal lung shows a light network which radiates outward from the hilus that indicates the positions of the bronchi, blood vessels and lymphatics.

In disease the shadows of this radiating network becomes exaggerated but the shading may be so slight in a diseased as compared to a normal lung that even a trained observer may encounter considerable difficulty in arriving at a correct conclusion. Many plates and fluoroscopic examinations are very conclusive but, on the other hand, it is frequently true, as Stewart has said, "The x-ray plate of the

chest does not make the diagnosis. It helps to make it. It is witness, not judge and jury." It is very helpful to know what is seen on a plate or a fluoroscope when the examination is made by a keen skillful observer. His report compares in value to a competent truthful witness on the witness stand, where much is at stake, while the conclusions of unskillful men are worthless and frequently very harmful.

In the roentgenologic diagnosis of pathology in dental plates there are several primary lessons to be learned, regarding normal teeth and normal bone tissue of the adjacent regions. Here again spurious pathology may be interpreted when none exists. To make an exposure correctly, with the film in the proper position and having the tube tilted at exactly the proper angle, is not one of the simplest procedures in x-ray technic. The mental foramen is generally found between and just below the apices of the lower bicuspid teeth. The shadow cast upon the dental film looks not unlike the shadow of a chronic periapical abscess and is sometimes diagnosed as such, when in fact the tooth condemned is sound and healthy. To a lesser extent similar mistakes may be made of the upper central incisors by the overlapping of the anterior palatine foramen over the apex of one or both of these teeth. Sometimes, too, the roots of some of the molar teeth appear to project into the antrum, when in actuality their roots are covered by much bone tissue.

One might write at considerable length concerning mistakes in various other phases of roentgenologic work. The fields of urology, eye, ear, nose and throat work, and other specialties, wherein the x-ray is made use of, have not been touched upon, but the writer feels that it is scarcely necessary to go into this matter quite so exhaustively.

The surgeon, the physician, the orthopedist, the oculist, the aurist and the urologist are depending more and more upon the added information the roentgenologist can give, and it will not be long before the gynecologist and the obstetrician will also collaborate with him to a greater extent than in the past. Whenever it becomes necessary to consult with anyone in establishing a diagnosis, is it not the part of good judgment and honest dealing to call into service the men who are your brother practitioners? Just why should it be necessary to employ the services of men with no license, no medical training, no special experience?

The laity today encroach upon many of the special fields in medicine. The experienced oculist,

unfortunately, has in competition the optometrists and opticians. It is unfair to the physicians who have had many years of medical training to be forced to compete with unscientific men. And it should not be possible in this day and age for former paper hangers and plasterers to enter fields of ophthalmology under the high sounding names of optometrist and optician. The experienced oculist, who has given years to the study of medicine, deserves the support of the laity and profession alike. It is earnestly hoped that the field of roentgenology will never be encroached upon to a similar extent. It must not occur.

The x-ray apparatus is just as truly a medical instrument and a part of the physician's armamentarium as is the stethoscope or other medical apparatus used in making diagnoses, but never do we employ an untrained, unscientific, inexperienced man to assist us in making a diagnosis through the instrumentality of the stethoscope. Why, then, use the x-ray apparatus and its product, the x-ray film, in this unscientific manner? The stethoscope is a most valuable instrument; in fact it is indispensable, and the profession would not go on practising one day without its use. But why is it so valuable? Not because of what we hear through using it, but rather because of the accurate interpretations that are made by the scientific men who uses it. In like manner the x-ray plate and the fluoroscopic screen are not valuable because of what is depicted but because of what is interpreted and diagnosed. Every field of medical practice that assists materially in raising the percentage of correct diagnoses deserves the wholehearted support of the entire profession.

We all belong to a scientific and dignified profession. The surgeon, the internist, the urologist and the proctologist all fill an important place in medical practise. The barber no longer attempts to practise medicine, but in the fields of ophthalmology and roentgenology we still have the *alien* practitioners. Can we not rightfully appeal to all to assist us in raising the dignity and standing of all portions of medical practice, orthopedics, pediatrics, ophthalmology or roentgenology? We are all interested in a common purpose, the prevention, control and treatment of disease. Let us not forget to uphold the dignity of our profession and may we ever hold to the view that a little learning is a dangerous thing.

## THE ACHIEVEMENTS OF MODERN MEDICINE\*

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BOISE, IDA.

This is the time of the year when the great commercial firms of the business world are busily engaged in stock-taking and in the inventory of their assets and liabilities, from which they may strike a balance and ascertain whether they have made a gain or a loss the past year. Listed among the most valuable of the assets of some firms and corporations long in the field are what are termed "intangible assets." That is to say, the good name, the prestige, and the reputation for fair dealing and excellent quality of their products. I need but mention such firms as Squibbs, Parke Davis & Co., Colgate and the like, for you to know what I mean.

I have thought that it might not be unprofitable for us of the medical profession to take stock, as it were, of our past accomplishments and our future prospects. All of our assets are of the intangible variety. This stock-taking we need to do occasionally, for in the every-day practice of medicine we encounter many disagreeable experiences, many disappointments, many arduous days and nights of nerve-racking toil and strain. Added to this, we are often misunderstood, often condemned and maligned, and called hard names. Notwithstanding the most self-sacrificing efforts on our part, we encounter much ingratitude and lack of appreciation for the blessings of medical science.

As first among our assets, let me say we are members of an ancient and honorable profession, a branch of science that has conferred priceless blessings and benefits upon humanity. There was a time, several centuries ago, when our profession was largely an art, an empiricism. Today it is both an art and a science, and becoming more and more nearly an exact science day by day.

It is like a great river that, starting way back in the hills the past century, has absorbed contributions from numerous streams and rivulets of investigation and knowledge until today it is like a vast Amazon, flowing ever wider and deeper toward the ocean of perfect knowledge, carrying as it goes vast blessings to civilized mankind that live along its course.

What then are some of the achievements of our

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profession? What are these intangible assets? What has it accomplished in the last half century? First of all, just to arouse you from your somnolence and cause you to sit up and take notice, let me say it has added to the expectation of life some fifteen years. That is to say, it has added fifty per cent to the average longevity of mankind in civilized countries within this period of time. To put it another way, it has increased the longevity of every man, woman and child from an average of thirty years a half century ago to approximately forty-five years today, and this is still increasing.

How has it accomplished this, you ask. The time at my disposal will not permit me to mention more than a few of the more salient, outstanding conquests. Scientific medicine is very modern. We need go no farther back than the time of Pasteur who, in 1881, proved that certain diseases were due to microorganisms, demonstrating this by showing that anthrax, in domestic animals, was due to a microorganism. This view was vigorously combated until he made his historic experiment of inoculating fifty sheep. Twenty-five of these he had protected from the disease by vaccination. The other twenty-five were unvaccinated. All of the twenty-five unprotected died, while not one of those vaccinated died. This was, in reality, the birth of our present scientific knowledge that diseases are often caused by microscopic germs. It was also Pasteur who discovered the cause of rabies, or hydrophobia, in dogs, and the cure for the disease by inoculation.

True it was that Jenner, the apostle of vaccination, demonstrated in 1796 that he could prevent smallpox in humans by vaccinating them with the virus of cowpox, but he did not know why they were thus protected. Next came Lord Lister, who showed that certain chemicals, which he called "antiseptics," had the power to destroy these pus-producing microorganisms, and thus prevent or clear up suppuration in wounds. Lister found that, prior to his use of antiseptics, forty-five per cent of his cases of amputation died. Today it is rare indeed for death to follow an amputation, and practically never as the result of an infection of the wound.

These, then, were the beginnings of modern antiseptic surgery, later superseded by aseptic surgery, which has vastly enlarged the field of surgical work, whereby so many millions of lives have been saved and other millions prolonged and made more bearable.

Following these come the works of Klebs, of

Loeffler, in the discovery of the bacillus of diphtheria, of Koch in the discovery and isolation of the bacilli of tuberculosis, and of the prevalence of this disease in the bovine family. Let us mention also the work of Schaudinn in the discovery of the spirocheta-pallida of syphilis, and of Ehrlich in perfecting salvarsan as a cure for this age-old curse of mankind, and the work of Wassermann in working out laboratory methods for the accurate diagnosis of this disease. But, as you know, it is manifestly impossible even to chronicle the names of the long list of painstaking research workers who have each contributed in a greater or lesser degree to the sum total of our present day knowledge of the microbic causation of disease.

Some of the most beneficent and revolutionary discoveries have been made by our own compatriots in America. I would mention here the discovery by Dr. Long and Dr. Morton of general anesthesia, induced by the inhalation of ether, producing thereby an artificial sleep under which the most formidable of operations are performed without the slightest suffering on the part of the patient. This one fact has also enormously expanded the field of operative surgery, making possible the saving of many lives that must otherwise perish.

I might also mention the pioneer work of J. Marion Sims in perfecting operative technic for the relief of diseases peculiar to women; of the brilliant work of Senn, of Murphy, of Crile, of Deaver, and of the Mayo brothers and many others too numerous to mention.

Let us consider for a moment, however, the monumental achievements of our research workers in the field of infectious, epidemic diseases, these terrible scourges that in ages past well nigh depopulated whole countries in one season. In my boyhood days in the South we had an annual scare from a yellow fever epidemic. This dreadful disease, breaking out at some of the Gulf ports, would spread northward rapidly, terrorizing the people, and causing an exodus to northern states that taxed the capacity of the railroads to carry them. Business was paralyzed, shotgun quarantines were established at all roads leading into towns and nobody permitted under penalty of death to enter.

What has happened to yellow fever? Devoted members of our profession, Drs. Carrol, Reed, Gorgas, Lazear and others, risking their lives, repaired to Cuba and carried on intensive research and experiments until they fastened the crime for this disease upon the stegomyia mosquito, and devised means

for destroying the pests. This victory was not accomplished without sacrifice. Dr. Carroll was stung by the insects that had first stung a patient with the disease, and became violently ill but fortunately recovered. Dr. Lazear was not so lucky. Deliberately allowing an infected mosquito to sting him, he also contracted the disease and died a horrible death.

This and the subsequent brilliant work of Dr. Gorgas at Panama made possible the building of the canal, for without the devoted sacrifices of these men it would still be impossible to build it today. Likewise, this achievement has made of the tropics a "white man's" country, where he may visit and do business safely. It has also put a stop to the devastation of our own southern states by the disease.

Also malaria, the disease that afflicted so large a section of our country until it was no distinction but rather the rule for people to have "chills and fever," was found to be due to a particular breed of mosquito, the anopheles, and by wholesale destroying of its breeding places the disease has been reduced to the minimum.

Smallpox, known in ancient times as the plague, the black plague, and as black smallpox in my childhood days, was another of the periodic outbreaks that invariably took a heavy toll of human life. The mortality from the epidemics of fifty years ago was very high. Today we do not have epidemics, and the occasional sporadic case is mild indeed by comparison. This is another victory of which we may well be proud.

When I began the practice of medicine, thirty-six years ago, diphtheria was one of the most dreaded of diseases. Many the doctor, in treating this disease, has carried it home to his own children and promptly lost them. Epidemics were not only frequent, but the mortality in those days was more than fifty per cent. Today, thanks to the discovery of the specific bacilli causing the disease and of antitoxin as a cure and preventive, we no longer have epidemics, and the mortality in the few cases that do occur has been reduced to 5 per cent. Is not the routing of this scourge of childhood a victory of which our profession may well be proud?

In our southern states there have lived for many years large numbers of people who were pale, listless and unable to work. They were called lazy and indolent until it was discovered by the Rockefeller Foundation for Research Work, that they were really sick, and their ailment due to the hookworm, acquired by those who for sake of economy

or other reasons were in habit of going bare-footed. This affliction is being rapidly annihilated.

Cholera was the specter that stalked the battle fields of the world for a thousand years, claiming far more victims than the bullets of the enemy. The specific germ causing it is known and when the proper sanitary measures are applied it is reduced to negligible quantity.

What of typhoid fever? Less than twenty years ago this disease annually took a heavy toll of life, to say nothing of expenses and loss of time of the thousands who fortunately recovered. During the Spanish-American war we lost four times as many troops at Chickamauga and Pensacola in our camps, as we lost in battle in Cuba. The specific bacillus was known for some years but it is only recently that immunizing inoculations have proven that it can be entirely prevented. In the World War the loss from this disease was practically none.

Take appendicitis. When I began the practice of medicine deaths from "inflammation of the bowels," as we called it then, were not at all uncommon. We recently lost our adjutant general Padgham from a neglected case of this disease, and we thought it a great pity. But a quarter of a century ago it was of common occurrence. Today, thanks to improved surgical technic and to education of the laity toward early diagnosis and operations, deaths from this cause are very infrequent.

And lastly, let me mention insulin. That brilliant discovery was made by Drs. Banting and Best, two young Canadian doctors, for the relief and cure of diabetes, heretofore one of the most obstinate and fatal of diseases.

And may I remind you that every one of these and many other beneficent discoveries have been given freely to a suffering world without special reward to those who have made them. Who can estimate the size of the fortunes that might have been obtained, had the discoverers chosen to patent them and hold them for personal profit, as would most certainly have been done by members of any other profession or business. What other profession gives so freely to the public the results of its labors? What other group of men do you know of who are constantly striving to put themselves out of a job by seeking to reduce the need for their services? Have we not a right to be proud of the record of our profession?

In conclusion, I would remind you that not one of these beneficent discoveries I have mentioned, or the hundreds of others I might have enumerated,

have been made or contributed to by members of these so-called sects or schools that have sprung up like mushrooms in recent years. What contribution, I pray you, has osteopathy, hydropathy, naturopathy, chiropractic for example, made toward medical science? You cannot name one. They call themselves pathy this and pathy that, and they seek to gain prestige and sympathy by denouncing the regular medical profession. They call us allopaths, the medical trust, the dominant school, etc. We deny these charges in toto. We are not allopaths. The term was originally applied to the regular profession by Hahnemann, the father of homeopathy, who applied it to others than homeopaths. The word "pathy" is from the Greek meaning suffering, pain. "Allos" means other, literally, other suffering, which means nothing.

We are not a "pathy," neither are we a "school" of any sort. We neither profess nor follow any set line of thought or action. We seek truth from every possible source and apply any and every form of treatment that promises to heal the sick. We are, in short, the regular medical profession.

Most of these sects or schools in the beginning of their course gained notoriety and prestige by denouncing and condemning the use of drugs and the knife, calling the regular profession "dopesters," "butchers," etc. Now we find them asking the legislature to grant them the right to be "dopesters" and "butchers" too.

They say we are close corporation, seeking to stifle competition. We deny it. We say the field of medicine is open to all on equal terms. Let them conform to and comply with all the requirements that members of the regular profession have complied with. Then they will be cordially welcomed. Let them drop their peculiar prefixes of osteo, chiro, hydro, naturo, and their pathies, etc., the use of which is intended purely for prestige and profit. In short, let them come in the front gate and not try to sneak in over the back fence.

We want it clearly understood that we are not fighting these "schools" in any way whatsoever. So long as they adhere in practice to the peculiar tenets of their school we shall have nothing to say. But we do seriously object to their claiming or demanding equal rights and privileges with the regular profession, when they have contributed nothing to the science of medicine and surgery, but rather, until now, condemned and denounced it. Let them comply fully with the high standards now required of the regular profession in Idaho and they will find no opposition.

## MIGRAINE AND ITS TREATMENT\*

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Ranking with colds as a frequent complaint and one prone to be treated indifferently is headache. This as an entity and not merely as a symptom is as obscure today as it was two decades ago. It is a difficult problem to unravel its cause, as such. Each patient with this symptom must be studied carefully and by all means at one's disposal. Too often this has not been done and as a consequence individuals who are chronic sufferers from headache have received for treatment many various drugs that result in more harm than good.

I firmly believe that continued headache has no individual entity as a disease, but as a symptom it may persist for a long time and as the sole complaint the patient has. It may occur from many causes and in all known diseases. It may arise from organic brain disease, nephritis, cardiovascular conditions, anemia and disturbances attributed to the glands of internal secretions; also during acute and chronic infections. It may result from poisons, as alcohol, lead, excessive use of tobacco, tea and coffee. The eyes are frequently at fault, due to errors in refraction, especially astigmatism and hypermetropia as well as muscular unbalance. Infected nasal sinuses, nasal diseases and dental disease may be responsible for pain about the eyes and head.

Other causes and forms of headache are more common, especially those associated with gastrointestinal disturbances and digestive disorders. Thirty per cent of all cases occur between ages of five and ten, usually the school age.

Of the foregoing headaches this paper will not deal, as it is obvious that careful diagnosis as to etiology, followed by removal of the underlying causes will in nearly all cases result in curing the chief complaint of the patient, namely, headache.

It is of migraine that I wish to speak. Numerous theories as to etiology have been advanced, which itself indicates that as yet little is known of this disease. It is generally conceded, however, that heredity and predisposition play an important role. The disease appears to follow Mendel's law, i.e., that its determining factor shall be present actively or inactively in one or the other parent. The symptom-complex is characterized chiefly by severe

\* Read before King County Medical Society, Seattle, Wash., Nov. 20, 1924.

paroxysmal headache, typically unilateral, associated with disordered vision and mental depression and often digestive disturbance. The mechanism and exciting cause of the attacks are not well understood.

I wish to sketch briefly the course of a typical attack. Frequently in the morning on awakening the first phase may make its appearance as a sense of chilliness, fatigue and depression, sometimes with cold extremities, a clammy sweat and dizziness. Then may come ocular manifestations, black specks, moving lights, or in the more well defined attacks the curious serrated spectra, sometimes with hemianopia. These sensory disturbances are soon accompanied by a boring, gnawing and often thumping headache. The typical headache is a hemicrania; but it is often bilateral and, as it increases in intensity, it merges into nausea and not infrequently vomiting. With this comes relief to some but not all, and days of combined headache and vomiting may ensue. This group of symptoms may be present in toto or just one or two phases are manifest.

Between attacks the patient may be very comfortable and attend to his duties in the usual and efficient manner. On questioning him, we find that in a large percentage of cases a parent, brother or sister is a sufferer from the same complaint, and that the patient himself gives a history of having had attacks when at school and frequently having had to leave his studies. Women usually date these attacks from puberty.

One of the many theories as to etiology of migraine is that it is a metabolic disorder, with the retention of toxic chemical substances. But A. H. Gordon, Professor of Medicine, McGill University, has proven conclusively in his typical cases that there is none or in some cases only slight variations in the blood and urine chemistry of his patients.

"After eliminating other factors," says Minot,<sup>2</sup> "diet and digestive disorders should be considered." In some cases types of food would appear to be the sole cause, while in others it seems but contributory to the production of the symptom. Carbohydrates and faulty carbohydrate metabolism seem to stand prominently forth as the food cause of migraine, either typical or atypical. One may suspect but never perhaps be able to foretell definitely whether a patient with headache of the migraine type will be relieved by the reduction of carbohydrates. Here, again, is demonstrated where a careful history taking will put us on the right track.

Quite often a patient will relate that paroxysms follow the excessive intake of candy or other form of carbohydrate. In some cases an analysis of what the patient is accustomed to eat will reveal that he takes excessively of carbohydrate, either an absolute excess or a proportionate excess to the other kinds of food. The ultimate criterion to decide whether carbohydrates are associated with the production of migraine rests with the therapeutic effect of the diet properly administered, and likewise with the production of the symptoms by the excessive intake of carbohydrate. It is clearly recognized that, while many cases can be alleviated by the dietary measures, there are many that derive no benefit whatever.

Church and Peterson<sup>3</sup> advance the theory that migraine is a cerebral disorder. Basing their opinion upon the fact that many of the most prominent and distressing symptoms are cortical, i.e., hemiopia, motor loss, crossed hemicrania, mental features, temporary word deafness, paresis of ocularation, etc. In April, 1919, Pagniez, Vallory-Radot, and Nast advanced the theory that migraine seizures were the results of anaphylactic manifestations and published a report on its treatment by intravenous injection of horse serum, later substituting peptone for the serum. Following this line of thought, investigators in Chicago have sought for evidence to support the anaphylactic theory and have reported twenty-five migrainous patients treated by intravenous injections of peptone. The results of the treatments were divided into three groups—much improved, moderately improved and not benefited.

In the group of much improved were those patients who were free from headache for two months or more after treatment was discontinued. At the end of that time the headaches returned and were again controlled by peptone. Nine patients fell in this group. Twelve patients fell in the group of moderately improved and of these ten had attacks of nausea and in all but two it had disappeared. Four patients were not benefited to any appreciable extent. Their conclusion was that the intravenous injection of peptone has a definite action in temporarily relieving or modifying migraine. Whether these results are due to desensitization or to some other action of peptone is not known chemically. Migraine has many of the characteristics of a sensitization disease.

Wilfred Harris<sup>4</sup> is very emphatic regarding the use of luminal in migraine in his cases, basing his

treatment on the analogy of migraine and epilepsy. In order to receive any benefit from the administration of luminal, it is necessary that it be given over a long period.

Biglund<sup>5</sup> advocates strongly the use of calcium lactate 30 gr. t.i.d., reporting twenty cases, of whom sixteen cases of chronic migraine sufferers reported that their attacks were abated. Two were cured and two were later found not to be typical migraine cases.

From the various theories and treatments of these men who are authorities on this subject, as well as from my own limited experience, it is obvious that as yet there is much to be desired in the treatment of migraine, that each case must be studied and treated on its own individual merits and that no definite rule can be intelligently laid down for a uniform treatment. In my cases I have had two in which peptone was used with good results. The others responded encouragingly to cannabis indica and gelsemium. All the cases were carefully and thoroughly studied before treatment was instituted, a careful history being taken in each and any functional or organic defect corrected. In several cases the correction of diet or refractive errors rendered the attacks less frequent and less severe, and with a common sense hygienic routine established the patients have been fairly comfortable.

Open air exercise is of great value for the simple reason that it acts as an agent in relieving the overloaded system of the retained toxic, metabolic products, whether they be due to overindulgence in carbohydrates or protein diet. I am of the opinion that improperly balanced diet, sedentary occupation and intestinal stasis are the guilty trium-

virate, which together cause the retention of metabolic products which are the activating influences for the production of migraine.

Three things are essential in the treatment of a patient for migraine. These are open air exercise, ample sleep, freedom from worry, and of course the correction of any coincidental defect. During the attack itself  $7\frac{1}{2}$  minims each of the tinctures of gelsemium and cannabis indica, given at the first sign of the coming storm and thereafter three times daily, until the attack has subsided. Free elimination and a bed in a cool, dark, quiet room is very beneficial.

#### SUMMARY

1. A very careful history should be taken of each case suspected of migraine, especially in regard to childhood or adolescent attacks or headache in other members of the patient's family.

2. A careful and thorough study of the case should be made, and all contributory defects be corrected.

3. A common sense routine for the patient should be established, emphasizing open air exercises, ample sleep, no worry and free elimination.

4. During the attack itself place the patient in bed in a cool, dark, quiet room. Administer at once cannabis indica and gelsemium and three times daily thereafter.

My experience convinces me that peptone is a very beneficial measure and should be a distinct addition to our therapeutic armamentarium.

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#### THE INCOME TAX—TRAVELING EXPENSES— POSTGRADUATE STUDY

The Commissioner of Internal Revenue still holds that the expenses of postgraduate study and traveling expenses incident to attendance at meetings of medical associations are not parts of the professional expenses of a physician. He holds, therefore, that they are not deductible in the computation of a physician's federal income tax. In the computation of their federal income taxes, physicians should not deduct these expenses. They are advised, however, to protest against the payment of so much of the

money paid by them as is paid because of the commissioner's rulings. By making such protests at the time of filing returns, claims for refunds in event of a reversal of the commissioner's interpretation of the law will be more easily adjusted. No particular form of protest is required. State on the income tax return or in a memorandum attached to it the amount expended for postgraduate study or for traveling expenses, as the case may be, and that the payment of so much of the tax as is the result of the compliance with the commissioner's ruling which holds that said amounts are not deductible is made under protest.—*Jour. A. M. A.*, Feb. 28, 1925.

# NORTHWEST MEDICINE

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## EDITORIAL

### INTERNAL URINARY ANTISEPTICS

In 1921 Edwin Davis, after a comprehensive investigation of this problem, stated, "there is no sound experimental or clinical proof of the fitness of any known drug for use as an internal urinary antiseptic." Despite the occasional brilliant results reported from the use of acriflavine and mercurochrome by mouth, this statement still holds true. The time honored and still popular urotropin has definite limitations, due to the uncertainty of its excretion, the difficulty of maintaining the highly acid urine necessary for its conversion, its lack of any antiseptic value at the kidney level and the irritation that frequently follows its use in doses large enough to be effective.

The value of the oral or intravenous administration of the medicinal dyes, gentian violet and acriflavine and of mercurochrome has not been established clinically. Although they have proven effective in some instances, the fact that they are not universally employed attests to their untrustworthiness. The irritating effects and frequent reactions attending their prolonged use diminishes their value in the chronic urinary infections.

A new field has been opened up by the work of Veader Leonard\* who is in charge of the Biologic and Clinical Investigations National Research Council Subcommittee on Internal Antiseptics. He has described a substance, hexyl resorcinol, obtained by the alkylation of resorcin, that is the most powerful nontoxic germicide known. It has a bactericidal power fifteen thousand per cent greater than resorcin and four thousand per cent greater than phenol. Moreover, it is nontoxic by mouth, can be administered indefinitely with no irritating effects and, despite its conversion to a large extent into an inert conjugate, enough is excreted to insure a continuous flow of bactericidal urine.

Clinically Leonard has demonstrated that urinary infections due to *B. coli*, when the bacterial count is low, and those due to the gram positive

cocci, "clear up promptly, completely and permanently with no other treatment than hexyl resorcinol by mouth." In the longstanding infections with invasion of the renal parenchyma disinfection is difficult, although even here there may be pronounced clinical improvement. The advantages prior to instrumentation or operation on the urinary tract of a nonirritating bactericidal urine, which its use insures, are obvious. There can be no question that hexyl resorcinol more nearly approaches the ideal internal urinary antiseptic than any drug employed at present for this purpose. The test of clinical usage is awaited with a good deal of interest.

### SUPPRESSION OF DIPLOMA MILL

An institution with the mouth-filling title, "American University of Sanipractic," has existed in Seattle for several years. It has shifted from one location to another, its projectors recently purchasing a portion of a block in the residential district containing two spacious residences, one for the purpose of educating and producing sanipractors and the other as a sanatorium. Its career has recently been terminated by court action which has revoked the charter under which it has existed in the state of Washington. This action resulted from an investigation revealing that this has in reality been a diploma mill. Testimony was given that a diploma was obtainable for sums ranging from a few dollars to several hundred, depending on the financial possessions of the applicant. These diplomas were obtainable with a minimum of study or with no actual study whatever. Notwithstanding a total dearth of knowledge regarding the human body and its ailments, the diploma declared that its possessor was qualified to practice the art of sanipractic.

By reason of the fact that our liberal and generous legislators have granted examining boards for every imaginable sort of drugless healers, a sanipractic board was obtained for the purpose of issuing licenses to representatives of its kind. The question naturally arises, how could these ignoramuses, possessors of these diplomas, qualify to pass an examination for a state license? Bless your soul, the simplest thing in the world. These accommodating sanipractic licensors were accustomed to present to the president of this "American University" copies of questions to be propounded to the seekers for licensure. These dumbbells were then coached on the questions for their forthcoming examination

\* Leonard, Veader: Hexyl Resorcinol. Development and Clinical Application of a Synthetic Compound Possessing the Experimental Requirements of an Ideal Internal Antiseptic. Radiol. Jour., Dec., 1924.

when, behold, they were able to successfully meet the requirements and were duly licensed to practice on our citizens.

This fountain of knowledge having been obliterated, the next question was how to suppress these bogus practitioners. Then appeared an illustration how enlightened and fair minded legislators can function for the protection of our citizens. Near the termination of the abbreviated session an Act was passed, with opposition only from a body of drugless healers, delegating to the Director of Licenses the responsibility of investigating the previous records of all drugless healers licensed to practice in the state. If he is satisfied that anyone has obtained a license without a three years' course of study which is prescribed in the drugless healers Act, he can forthwith cancel the license. It is stated there are over four hundred sanipractors in the state, of whom about one-third are possessors of these bogus diplomas. It is expected there will immediately be a sifting of these drugless healers through the Department of Licenses.

One cannot resist a word on the existence of such a farcical situation in this great state. Here is truly a commentary on the legislature and the influence exerted on its members a few years ago, when a wholesale licensing mania seemed to possess them, as a result of which various groups of applicants, representing every imaginable sort of healing, were granted the privilege of practicing upon its citizens. What has already occurred in this line probably cannot be remedied, but measures already proposed and in contemplation for future protection against ignorant practitioners should demand the support of all intelligent citizens.

#### RECENT MEDICAL LEGISLATION

Every physician is more or less personally interested in the biennial session of his state legislature because in most states the introduction of measures pertaining to public health and practice of the healing art is customary with considerable regularity. Rarely is a session held of a legislature in the Northwest which fails to follow a program of this sort. Since the various legislative sessions have nearly all terminated at this writing, it will be of interest to review their actions regarding matters of medical concern.

In Oregon there was much agitation and widespread interest in the new Practice Act, by which it was proposed to exercise supervision over all applicants for licensure in that state. Unfortunately

the medical profession was not a unit in its support, and there was a general onslaught from nonmedical practitioners. Another bill, remodeled to meet various objections, failed of consideration. The educational value, however, of the discussion and publicity was considered quite worth while and something substantial may later result in consequence of information scattered throughout the state.

The sudden and dramatic termination of the Washington session at the end of half its allotted period prevented action on the carefully prepared bill which would require all applicants for license in the healing art to pass an examination, or give sufficient evidence of knowledge of fundamental branches relating to the human body. This met with such general approval, however, that it is believed the measure will have a fair prospect of adoption when the legislature convenes for the remainder of its session in November. The widespread indignation over the disclosure of the sanipractic diploma mill in Seattle made it possible in short order to pass the bill requiring members of this cult to prove their educational qualifications or fail to retain their licenses.

In Idaho the osteopaths made a considerable effort for legislation placing them on equality with physicians, although the act which originally brought them into existence was passed on the ground that they were not physicians and surgeons but adhered to a new and peculiar system of practice. Now, without any pretense of medical education or examination, they demand equal recognition with all the rights and privileges of doctors of medicine. When the bill granting these demands was rejected by the legislature a new bill was introduced with the following definition of osteopaths: "The term osteopathy, as used in this act, shall be held to be the practice and procedure as taught and recognized by the regular colleges of osteopathy." This bill also provides that osteopaths should be subject to all municipal and state regulations and privileges, rights and obligations "as physicians of other schools of medicine," also with respect to the treatment of cases or holding offices in public institutions. This bill was promptly defeated. The tuberculosis hospital bill, concerning which there has been so much controversy during the past two years, has passed the House at this time but its ultimate future has not been determined.

The Montana legislature took action on no bills relating to the practice of the healing art, a fact which should be the subject of congratulation.

Further discussion of the matters mentioned above will be found under the department of Public Health Leagues.

### THE PORTLAND MEETING

The meeting of Pacific Northwest Medical Association at Portland, June 29-July 1, gives promise to be notable among medical gatherings of the Northwest. Local arrangements are progressing satisfactorily. The meeting will be held in the rooms of the Multnomah Hotel which will also be the headquarters.

There will be a scientific exhibit which will be sponsored by the University of Oregon Medical School. Exhibits will also be shown by various physicians throughout the Northwest district. Any physician who has specimens, instruments or laboratory methods or technic that he wishes to demonstrate may have an exhibit free of charge, the only stipulation being that the exhibit must be outlined to the committee so that it may pass upon its interest to the profession.

Hotel reservations will be made by the committee, Dr. Stuart Sheldon, Selling Building, Portland. No hotel reservations will be accepted except from men already registered by having paid their fee. This plan is necessary to eliminate reservations of those who hope to come and then do not show up.

The following speakers have consented to appear:

Dr. Nathaniel Allison, orthopedist, formerly of St. Louis, now associated with Harvard Medical School and the Massachusetts General Hospital, will speak on (1) The Diagnosis of Knee Joint Diseases and Injuries, (2) The Diagnosis of Hip Joint Affections.

The Pacific Northwest Orthopedic Association will be organized at this time and Dr. Allison will give them a special paper. The title of this paper will be furnished in a later announcement.

Dr. McKim Marriott will address the Association on "Some Newer View Points Concerning the Nature and Treatment of Nephritis," and a second paper on acidosis. Dr. Marriott was a very splendid lecturer at the University of Washington Extension Course some three years ago. In addition, the North Pacific Pediatric Association will meet on Monday, June 29, at which time Dr. Marriott will address them on "Some Problems in Infant Nutrition."

Dr. Alan N. Drury, lecturer in cardiology at the University College Hospital Medical School, London, England, will be the special attraction for

this meeting. Dr. Drury has done a great deal of work on cardiology and more recently is particularly interested in the study of edema. His titles are not yet in but will probably be on these subjects. He will deliver two or three special lectures for internists who are especially interested in cardiology. These lectures will be open to anyone who cares to attend but will be given apart from the main meeting of the Pacific Northwest Medical Association.

Dr. G. N. Stewart is a former Canadian, educated in Edinburgh, Cambridge, Berlin, Strasbourg. He was originally Professor of Physiology at Western Reserve; then was Professor of Physiology at the University of Chicago for several years; more recently has been Professor of Experimental Medicine and Director of the H. K. Cushing Laboratories at Western Reserve University. Dr. Stewart will talk on "Physiology of the Suprarenal Glands, of the Thyroid, and the Island of Langerhans." He will present three most interesting lectures. He is an exponent of pure science in the study of the glands of internal secretion. His writings have been very extensive on various subjects of physiology.

Dr. James B. Herrick, Professor and Head of the Department of Medicine, at Rush Medical College, is well known to the profession throughout the Northwest through his writings on cardiology and particularly those pertaining to pathology of the coronary artery. His lectures will be on "Diseases of the Coronary Artery," "Angina Pectoris" and "Syphilis of Heart and Aorta."

Dr. Lewellys F. Barker is also a Canadian formerly of Toronto, later of Johns Hopkins, Leipzig, Munich, Berlin, McGill, later Associate Professor of Anatomy at Johns Hopkins, then Professor of Pathology at Johns Hopkins. More recently, he has been Professor of Anatomy of Rush Medical College and then Professor of Clinical Medicine and Physician in Chief to Johns Hopkins Hospital. He is one of the best known clinicians of the country.

Sir Henry M. W. Gray, of Montreal, is a well known English surgeon who has recently transplanted himself to Canada. He will speak on "Developmental Abnormalities affecting the Colon." He will discuss their far reaching effects and treatment. His second lecture will be on "Acute Intestinal Obstruction," and a third one "Carcinoma of the Breast." Dr. Gray's lectures will be authoritative and most interesting.

Dr. Barney Brooks, of Washington University,

St. Louis, Mo., is one of the most promising investigators along surgical lines. His work on anatomy and physiology and treatment of disorders of the extremities are classics. His subjects are (1) The Anatomic and Physiologic Pathologic Changes Associated with Diseases of the Circulation of the Extremities, (2) The Clinical Manifestation of Diseases of the Circulation of the Extremities and Methods of Diagnosis, (3) Methods of Treatment of Disorders of the Circulation of the Extremities.

Dr. Reginald Fitz, formerly of Harvard, more recently of the Mayo Clinic, and during the past three years at Peter Bent Grigham Hospital, in Boston, and again Professor of Medicine at Harvard, will give two lectures on (1) Diabetic Coma, (2) The Importance of the Laboratory to the General Practitioner. Dr. Fitz needs no introduction to the profession of the Northwest.

Dr. Henry W. Woltman, neuropathologist in the Mayo Clinic, will give two very important lectures on neuropathology. (1) A Discussion of the Clinical Aspects and the Pathology of Subacute Combined Degeneration of the Spinal Cord, (2) The Significance of Pain as a Symptom in the Diagnosis of Diseases of the Nervous System. These lectures are given by one of the younger exponents of the application of pathology to neurology.

During a special session in one of the rooms adjoining the main meeting, Dr. R. L. Benson, Professor of Pathology at the University of Oregon, will give an address on "The Pathology of Coronary Sclerosis," illustrated by gross specimens, microscopic slides and amplified in many cases by clinical histories of the cases discussed.

Registrations may now be made by addressing Dr. F. Epplen, 422 Paulsen Bldg., Spokane, Wash., or Dr. J. Earl Else, Stevens Bldg., Portland, Ore.

### THE ANNUAL IDAHO MEETING

The annual meeting of the Idaho State Medical association, to be held at Pocatello, has been set for September 10-12. Already a tentative program has been arranged with papers from the following well-known members of the profession: W. F. Braasch, Rochester, Minn.; Wm. R. Cubbins, Chicago; Dick and Dick, Chicago; Frank W. Lynch, St. Louis; Carl A. Haman, Cleveland; Ernest Sacks, St. Louis; W. A. Williams, Portland; William I. Terry, San Francisco. With a program of this sort already assured, there will be no question about the quality of this meeting.

## MEDICAL NOTES

### NEW ADVERTISEMENTS

Attention is called to the following advertisements appearing for the first time in this issue: Hollister-Stier Laboratories (page 8) specialize in hayfever pollens. Deshell Laboratories (page 20) present Petrolagar preparations.

**National Board of Medical Examiners.** Examinations by this Board, conducted on a national basis with a standard qualifying for entrance into the practice of medicine, is receiving increased recognition from the state boards of examiners, medical colleges, health workers and the general public. There are now thirty-one states which recognize the Board's certificates granted to candidates passing this examination, among them being Idaho and Washington. In ten other states favorable legislation is now pending and it is expected that eventually certificates granted by the National Board will be good in all parts of the country. Written examinations are held in twenty-six Class A medical schools throughout the country.

**Huge Shipment of Quinine.** The largest drug shipment that ever left an American port was recently sent to Greece, consisting of 14,000,000 five-grain quinine tablets. This will be used to combat the scourge of malaria existing in the refugee camps of that country. The American Red Cross appropriated \$85,000 for the purchase of this shipment. The cause of this extensive epidemic was the repatriation of nearly 1,000,000 Greeks from Asia Minor. The resulting scourge was almost as severe as that of typhus.

**Pacific Coast Society of Anesthetists.** This association will hold its annual meeting at the Yosemite Valley, May 18-21, in connection with the annual meeting of the Medical Society of the State of California. All physicians in the Northwest interested in the subject of anesthesia are cordially invited to attend this meeting whether members of the association or not.

### OREGON

**The Noble Wiley Jones Lectures** will be delivered in Portland, March 23-26, by Professor A. J. Carlson, head of the department of physiology, University of Chicago. He will discuss the following subjects: (1) Gastric secretions in health and disease. (2) The problems of the endocrines (two lectures). (3) Motor disturbances of the alimentary canal. (4) The problem of the liver. An invitation is extended to all physicians of the Northwest to attend all of these lectures.

**Hospital Assured.** A Veteran's hospital in Portland to cost more than \$1,000,000 is assured, according to word received from Congressman Watkins. He states that such a hospital, with capacity of three hundred beds, has been recommended by director F. T. Hines, of the U. S. Veterans' Bureau. It is stated that the draft of the bill is all that remains to be done.

**Addition to Hospital.** Negotiations were completed last month for an addition to the Emanuel Hospital, Portland, which will more than double its capacity. The new building will be five stories in height, containing one hundred and fifty beds and will cost \$175,000. It will be constructed of concrete with brick facing. This hospital is under the control of the Lutherans.

**Change in Hospital Operation.** Stockholders of the Corvallis General hospital at its annual meeting, Feb. 9, discussed the question of transferring the operation of the hospital to a charitable organization, in which case, there would be no taxes against the property. It was proposed to interest some church organization, the Masons or Catholic Sisters.

**Doctor Buys Hospital.** Dr. R. H. Mast has purchased the Davis hospital at Myrtle Point. Miss Helene Hughes, former head nurse at Hot Lake Sanatorium, will be its superintendent.

**Officer Promoted.** Dr. Carl W. Robbins, of Eugene, for several years a captain in the medical corps, United States army reserves, has been promoted to the rank of major.

**Dr. Frank E. Boyden, Pendleton,** who has practiced in that city since 1912, has moved to Portland where he will continue in practice.

#### WASHINGTON

**Starvation Specialist Again Featured.** In 1911 Linda Burfield Hazzard was convicted of second degree murder in the Kitsap county superior court for starving to death a patient under her treatment. Although untrained in the principles of medicine, she was a licensed practitioner and treated her patients by starving them. After serving a portion of her sentence she was paroled, in 1915, by Governor Lister on condition that she would leave the state. Later she applied for pardon from Governor Hart in order that she might be enabled to resume her form of practice. Although this was refused, she again opened a sanitarium in Kitsap county, where she resumed the practice of starvation. Recently, a patient was rescued on the verge of death, and she was arrested for practicing without a license. It was stated that the case would be delayed pending the outcome of the starved patient.

**Tuberculosis Sanatorium Suggested.** It has been proposed that a tuberculosis sanatorium be established for the counties of Whatcom, Skagit and San Juan. Such cases now, in Whatcom county, are treated in the detention home. It is believed that there are a sufficient number of cases to warrant the establishment of such an institution, although it would begin on a small scale.

**New Hospital Recommended.** Gen. F. T. Hines, director of the veterans' bureau, has recommended to Congress the erection of a general hospital on Camp Lewis reservation to cost \$120,000. It would probably be located near the neuropsychopathic hospital at American Lake. Eventually it will replace the Cushman hospital.

**New Hospital to be Established.** Yakima is to have a new hospital to be known as the Yakima General Hospital. It will be developed from an institution formerly known as Winifred hospital, which at present has a capacity for ten patients.

**Hospital to be Enlarged.** St. Lukes hospital, at Spokane, is to be enlarged by the construction of a new wing to cost \$60,000. It will have a capacity of 28 beds.

**Appointed to Hospital Position.** Dr. R. W. Smith, of Walla Walla, was recently appointed physician to U. S. veterans' hospital 85, located in Walla Walla.

**Will Encircle the Globe.** Dr. H. A. Hutchison, of Spokane, sailed from San Francisco early in February on a trip around the world. He expects to return home next summer.

**Mumps Closes Schools.** The schools of Deer Park were closed early last month on account of an epidemic of mumps. As there were over 100 cases in the schools the city council took this action at the suggestion of the school superintendent.

**Doctor Decorated.** Dr. J. A. Ghiglione, of Seattle, was recently decorated by the King of Italy through the local Italian consul in consequence of appreciation of Italian culture, art and literature. He received the decoration of the order of St. Maurizio and Lazara.

**Ordered to Staff Duty.** Lieut. Col. H. W. Wurde-mann, of Seattle, has been ordered to staff duty at Washington, D. C., to act on a committee on National Defense for the consideration of plans and policies with respect to the organization and training of the organized reserves. He represents the Ninth Corps Area, comprising the states of California, Oregon, Washington, Idaho, Montana, Wyoming and Arizona.

**Dr. C. J. Johannesson,** of Walla Walla, has returned home after a visit to Denmark. He made special observations as a guest of the Copenhagen Radiological society as well as observing the Mollgaard chemotherapeutic work for pulmonary tuberculosis.

**Dr. P. J. Scallon,** recently of Tacoma, formerly physician at the Federal hospital at McNeil's island, has located for practice at Port Townsend.

**Dr. W. C. Hills,** who has formerly practiced in S. Dakota and Colorado, has located for practice at White Bluffs.

#### IDAHO

**New Director of Veterans' Hospital.** Dr. C. L. Magruder, formerly of Maryland, has been transferred to the veterans' hospital at Boise. His special line is tuberculosis and internal medicine.

**Favors Tuberculosis Hospital.** At a meeting of the South Side Idaho Medical society, at Twin Falls, Feb. 6, a resolution was passed favoring the re-appropriation of the funds set aside in 1919 for the construction of a tuberculosis hospital.

**Hospital Under Construction.** A hospital is being built at Lava Hot Springs at a cost of \$50,000. It will have a capacity of 28 rooms equipped with mod-

ern furnishings of a first class hospital. The people of Lava are financing the institution.

**Appointed in Charge of Hospital.** Dr. H. D. Kistler, of Butte, vice-president of Murray hospital, has been appointed executive head of the institution, succeeding the late Dr. Donald Campbell.

**Appointed County Physician.** Dr. J. R. Young, of Pocatello, was recently appointed county physician by the Bannock county commissioners.

**In Charge of Hospital.** Dr. H. R. Visser, who practiced for several years at Colby, Wash., has moved to Boville where he will have charge of the Milwaukee hospital.

**Appointed County Physician.** Dr. W. P. Scroggs, of Twin Falls, has located at Jerome. He has been appointed county physician for Jerome county.

**Reappointed County Physician.** Dr. F. G. Wendell, of Sandpoint, was reappointed county physician by the board of county commissioners at its meeting, Feb. 11.

**Physician Reappointed.** At a meeting of the county commissioners, held in Paris, Dr. E. F. Guyon, of Montpelier, was reappointed county physician for Bear Lake county. He has held this position for the past two years.

**Dr. F. M. Cannon,** who practiced for several years at Arco, has moved to Point Reyes, Calif., where he will make his future home.

**Dr. Parkinson,** who has practiced for several years past at Rexburg, has moved to Arco.

**Dr. J. E. Milton,** formerly of St. Anthony, has moved to Los Angeles, Calif.

**Dr. T. E. Evans,** of Mountain Home, has moved to Nampa, where he will continue practice.

**Medical Wedding.** Dr. Charles F. Magee, of Moscow, was married, January 24, to Miss Lens Davis, of Vasper, Tenn. The wedding took place at the Davenport Hotel, Spokane.

#### MONTANA

**Payment of Medical Dues.** The secretary of the State Medical Association wishes again to bring before its members the necessity for the payment of annual dues, which should be remitted at once for county and state societies. This is essential for keeping alive the group protective policy as well as the maintaining subscriptions for the state association journal.

**Dr. George McGrath,** of Hamilton, president of the state medical association, has returned home after a visit to the East where he attended clinics and sought recreation.

**Dr. L. A. Gates,** who has formerly practiced at Missoula, has located at Ryegate.

**Dr. E. R. Fouts,** who has been located at Twinn Bridges, has moved to Poplar.

#### OBITUARIES

**Dr. Donald Campbell,** of Butte, Mont., died suddenly from disease of the heart, Feb. 6. He was born in

Nova Scotia in 1862. He graduated from the medical department of the University of Vermont in 1891 and located in Butte that year. He was one of the leading surgeons in Montana and was executive head of Murray hospital at Butte. He took an active part in civic affairs and politics. He served in the legislature as a delegate from Silver Bow county in 1907. His loss as a citizen and physician is felt by the citizens of the whole state.

**Dr. David A. Mitchell,** of Seattle, Wash., died Feb. 7, from angina pectoris at age 76. He was in active practice up to the time of his death, having been in his office that day and attended a patient within a few hours of his death. He was born in Wisconsin in 1849. He obtained his medical degree from Jefferson Medical College. He came to the state of Washington in 1887, locating at Newcastle. He located in Seattle for practice in 1894. He had a wide acquaintance and was beloved by numerous patients, being a typical representative of the old-time family physician.

**Dr. Oscar F. Davis** of Jordan, Mont., died suddenly in his office from disease of the heart, Feb. 5. He was born in Wisconsin in 1859. He first practiced at Alden, Ia. He resided in Montana for 35 years. For some years he lived at Judith Basin, where he was widely known as a successful physician. When the town of Moore was founded he established a drug store, and was the leading physician in a large, sparsely settled territory. He was a man of broad education and of extensive influence in that part of the state.

**Dr. Howard D. Miller** died at Seattle, Wash., Jan. 25, at age 57 years. He was born in Iowa and obtained his medical degree at the medical school of the University of Iowa. He located for practice in Audobon, Iowa, and came to Seattle in 1902, where he practiced until nine years ago, when he was appointed physician to the Northern State Hospital at Sedro-Woolley. Two years ago he joined the staff of Western State Hospital at Steilacoom, where he remained until two weeks ago.

**Dr. F. W. Redeker,** of Polson, Mont., died at the Mayo hospital at Rochester, Jan. 1, from pneumonia following a surgical operation. He was 71 years of age, born in Germany in 1853, coming to America in 1855. He graduated from Jefferson Medical College in 1874. For thirty years he practiced in Pennsylvania and moved to Montana in 1908, locating at Kalispell, later that same year moving to Polson. Besides practicing medicine he was proprietor of a hotel and operated a drug store. He had a wide circle of acquaintances in that part of the state.

**Dr. Oscar DeVaul,** of Pilot Rock, Ore., died in Portland, Jan. 17, from tuberculosis at the age of 65. He settled at Pilot Rock 28 years ago, coming from Missouri. He was one of the first school teachers in that town. Later, he obtained a medical degree and become one of the well-known physicians of Umatilla county.

**Dr. F. R. Burroughs,** of Ritzville, Wash., died Jan.

28, from cerebral hemorrhage, at age 66. He was born at Columbus, Pa. After studying at Allegheny College, Meadville, Pa., he received his medical educational at the University of Buffalo. He practiced for five years at Columbus and located at Ritzville in 1888. He was active in civic affairs, having served as councilman, mayor and postmaster. For many years he was the county health officer.

**Dr. Charles A. Hauber**, of Chehalis, Wash., died Feb. 5, from septic infection contracted in practice, at 58 years of age. He was born in Walla Walla county. During the World War he served in the army, being stationed at Vancouver, Wash. Five years ago he located for practice at Chehalis.

**Dr. C. S. Emery**, of Omak, Wash., died suddenly from a heart attack Jan. 2, at San Diego, Calif. He practiced for many years in that section of the state and was well known, not only as an able physician, but as a successful rancher, having one of the largest cattle ranches in that part of the state.

**Dr. C. R. Bailey**, of Rosalia, Wash., died at Colfax, Jan. 22, at the age of 87. He was born in Kent, England. He had resided in Whitman county for 22 years.

## REPORTS OF SOCIETY MEETINGS

### OREGON

#### CENTRAL WILLAMETTE MEDICAL SOCIETY

Pres., W. B. Neal; Secty., G. S. Beardsley

Willamette Valley Medical Society held a regular meeting at Albany, Feb. 5. Doctors from various cities of the valley were present.

#### PROGRAM

Dr. Ray W. Matson, of Portland, read a paper on "Problems in the Diagnosis of Tuberculosis."

Dr. J. Earl Else, Portland, presented a paper on "Surgery of the Chest."

#### POLK-YAMHILL-MARION MEDICAL SOCIETY

Pres., J. C. Bellinger; Sect'y., D. R. Ross

The Polk-Yamhill-Marion Medical Society held a meeting at Salem, Feb. 17.

The program consisted of a paper by Dr. C. Ulysses Moore, of Portland, on "Clinical and Experimental Study of Rickets in the Willamette Valley," illustrated with slides. Discussion opened by Dr. Walter H. Brown.

Dr. T. M. Joyce, Portland, read a paper on "Some of the Problems in Thyroid Diseases." Discussion was opened by Dr. H. K. Stockwell.

### WASHINGTON

#### KING COUNTY MEDICAL SOCIETY

Pres., A. C. Crookall; Secty., C. E. Watts

A general meeting of King County Medical Society was called to order at Seattle, Wash., Feb. 2, 1925, by Vice-President Palmer at 8:15. There were 88 members present. Minutes of the previous general meeting were read and approved.

A communication from the Central Standardization Committee concerning organized publicity for

clinics was read. It was moved that the recommendations of the committee be adopted and that the president appoint a committee to carry out its provisions.

#### PROGRAM

Dr. Frederick Eppelen of Spokane, read a paper on, "Therapeutic Use of Digitalis." He discussed the history of its use, source of supply, its pharmacology and standardization. In man digitalis probably does not act on the blood vessels and is not a diuretic. The toxic effects were discussed. The beneficial action of digitalis on the heart is largely due to its action on the conduction mechanism as to its manner of action. The ultimate action is slowing and deeper contraction of the heart. In hypertension with decompensation, digitalis may reduce blood pressure. If, however, the blood pressure is too low to maintain circulation, the digitalis may increase the tension. The use of digitalis in heart failure was discussed in various types of heart disease. Its greatest use in valvular heart disease is in mitral stenosis and in aortic regurgitation. Statistics were given to show that in pneumonia the action is beneficial. There are too many preparations on the market. We should confine ourselves to the dried leaf or to an assayed tincture or liquid preparation.

Dr. John Blackford said the measurement of the dose should be by minim glass rather than by drops.

Dr. George Miller spoke of the rate of elimination as being 18 to 20 minims a day.

Dr. A. C. Crookall read a paper on "The Business End of Medicine." He advocated changing the specialty section of the society to an economic one to be devoted to papers and discussions by members and selected laymen relating to subjects bearing upon the economic welfare of the individual physician and the profession as a whole, as well as those questions having to do with the relations of the medical profession and the public. A table was shown as being a probable picture of conditions as they exist in Seattle. This represented the profession as doing about half of the total actual and potential medical work of the city. Twenty per cent of the total actual and potential work is done by the cultists. Half of this is probably unnecessary. The other half represents the treatment of real functional or organic diseases. The cause of the spread of Cultism is partly due to the medical profession itself. We are afflicted with surgical hypertrophy and therapeutic atrophy, and saprophytic cultism thereby gains a foothold.

A meeting of the Surgical Section of King County Medical Society, was held Feb. 9, R. D. Forbes presiding. Minutes of the last meeting were read and approved.

Drs. Clarence A. Smith and George F. Warnburg were appointed to draw up expressions of condolence to the members of the family of the late Dr. David A. Mitchell, the same to be spread on the minutes of the society.

It was announced that the annual banquet of the society would take place in the Italian room of the Olympic Hotel at 7 p. m., March 4.

Dr. F. S. Bourns read an interesting paper on "The X-ray as an Aid to the Surgeon." He emphasized the importance of the X-ray in fractures from the medico-legal standpoint, its value in locating foreign bodies and in brain surgery. One of the greatest strides in medicine has been made possible by the X-ray in locating foci of infection.

In closing, Dr. H. J. Davidson discussed the layman's idea of the X-ray, and stated the physician should use it to its fullest possibilities. Dr. Jeffery spoke of its importance in traumatic conditions and assistance in early diagnosis. Dr. Dawson emphasized the importance of radiography before removal of breast or hysterectomy in cases of malignancy, and also of pre-operative radiation.

Dr. L. L. Stephens discussed the aid of the X-ray in radiation before and after operations for malignancy and its value on neoplastic tissue.

Dr. P. W. Willis read a paper on "When Not to Open the Abdomen." Many borderline conditions are not benefited by operation which is often so easy as to be actually dangerous. He deplored the lack of mature surgical judgment and lack of proper diagnosis. The abdomen should not be opened unless the surgeon is capable of performing any operation necessary, the hospital has proper facilities, and diagnosis is certain.

Dr. Hagyard said the exploratory operations should no longer be done unless under the diagnosis of acute appendicitis or other similar conditions. Dr. Peacock stressed the importance of careful physical examination, and the fact that in all right-sided pain, a careful urinary analysis should always be done. Dr. Bourns further brought out the point of making careful diagnosis.

#### PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

Pres., J. T. Dowling; Sec'y, M. J. Morris

The Puget Sound Academy of Ophthalmology and Oto-Laryngology met Feb. 17, 1925 at the Virginia Mason Hospital, Seattle. The meeting was called to order at 8:10 p. m. by President Dowling who introduced the President-elect, Dr. J. S. Davies, of Tacoma. Dr. Davies made a short talk on the plans for the ensuing year, urging the presentation of more clinical cases, well prepared. Drs. S. S. Howe, Bellingham, and C. W. Shannon, Seattle, were called upon for short talks, as Vice-presidents-elect. Minutes of the last meeting were read and approved.

Dr. L. H. Klemptner presented a clinical case which he had shown six months ago when he showed a clean ulcer of the septum and floor of the left nostril. Radium had cleaned up a sarcomatous growth blocking the left nostril. Discharge is considerable, bloody and odiferous. This case was discussed by Dr. Wanamaker.

The scientific paper of the evening was presented by C. J. Stansbury, D.D.S., "The Relation of Jaw Po-

sition to Deafness," illustrated by projected figures. During the past four years he has inquired of all his patients presenting a so-called "closed bite" in regard to their hearing, and reports a large percentage in whom hearing was defective. When the mandible is in normal relationship to the maxillae, there is no backward thrust on the condyle in the glenoid fossa. But with the forward and backward movement, as seen in the closed bite, there is retrusion of the condyle against the external auditory canal, also, there may be relaxation of the tympanic membrane because of absorption directly anterior to the tympanic ring. Patency of the eustachian tube, which is controlled by the palatine muscles, may be interfered with by the relaxation of these muscles and encroachment of the tongue upon the respiratory space with the condition of closed bite.

In discussion Dr. A. T. Wanamaker mentioned the probability of atrophy of the tympanic membrane following a disturbance of its tension.

Dr. Stillson said that the action of the tensor palati on the eustachian orifice is to pull the tube up at the isthmus.

Dr. N. D. Pontius said that relaxation of the drum-head in many of these cases may be due to old age. It is impossible to understand how the condyle of the mandible can close the external auditory canal entirely.

Dr. Stansbury in closing showed on a skull how thin the bone is in the region of the annulus and that it is possible under pressure for it to be entirely absorbed. He showed a skull in which the annulus was entirely lacking. Treatment of these cases is to bring the mandible back to its normal line.

#### IDAHO

##### SOUTHSIDE MEDICAL ASSOCIATION

Pres., H. N. Leete; Secty., W. F. Passer

The Southside Medical Association held its annual meeting at Twin Falls, January 29. There was a large attendance from the different cities in that part of the state.

Dr. W. G. Shulte of Salt Lake gave the address of the evening.

The following officers were elected for the ensuing year: President, Dr. A. F. Nielson, Oakley; vice-president, Dr. Charles Wetherbee; secretary-treasurer, Dr. W. F. Passer, Twin Falls.

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*Oxyuris Vermicularis* as a Causative Factor in Appendicitis. W. H. Harris and D. C. Browne, New Orleans (Journal A. M. A., Feb. 28, 1925), record their observations of twenty-two appendices containing *oxyuris vermicularis* in a series of 121 appendices presented in routine hospital laboratory examination, together with the special consideration of the histopathology of those appendices in which *Oxyuris vermicularis* infection has been found. The study of the gross and histologic pathologic condition of the appendices containing the *oxyuris* demonstrates conclusively that these nematodes possess a definite pathogenic role in the causation of the appendical lesion. The failure of recognition of the *oxyuris* as a factor in the production of appendicitis is due in general to the lack of detailed gross and microscopic study of the veriform appendix.

## PUBLIC HEALTH LEAGUES

### OREGON

#### MEDICAL BILLS BEFORE THE LEGISLATURE

The measure before the Oregon legislature, which recently closed its session, that was of most interest to the medical profession was House Bill No. 391, introduced by Representative McCallister. This was assigned to the committee on revision of laws in the House when a public hearing was granted. This was an Act "To define the healing art; to provide for licensing of individuals to practice the healing art; to create the Oregon board of licensure in the healing art; to provide for the organization of such board"; also to provide for its authority and its functioning, with all the other details common to a measure of this sort. The Act provided for a board of ten members, of whom four would be doctors of medicine, one homeopath, one osteopath, one eclectic and one chiropractic. The ninth member should be superintendent of public instruction, and the tenth secretary of the Oregon state board of health. Objections to the bill were raised by many medical men, osteopaths, chiropractics and others, the principle objection being the excessive number of medical doctors on the board and the unlimited powers granted to it. The Public Health League was then instructed to provide a new measure, excluding most of these objections. When presented this did not prove entirely satisfactory to the committee nor the physicians of the state and consequently no action was taken regarding it. It is now the intention of the officers of the League to prepare a bill that will be satisfactory to the medical profession and osteopaths and, if possible, satisfactory to chiropractics, and to present this measure before the people for their approval. It is felt that sufficient time was not taken in preparing the measure and presenting it before the medical profession. It is believed that it would receive their approval if they thoroughly understood its provisions.

#### SALE OF CAUSTIC POISONS

A bill regulating the sale of caustic poisons was passed by the legislature, in accordance with data furnished by the American Medical Association. This bill defines the label on caustic or corrosive substances and requires that, "The word poison shall run parallel with the main body of reading matter on said label or sticker, on a clear, plain background of a distinctly contrasting color, in uncondensed gothic capital letters, the letters to be not less than 24-point size, unless there is on said label or sticker no other type so large, in which event the type shall be not smaller than the largest type on the label or sticker."

#### CHIROPRACTIC REQUIREMENTS

A bill was passed requiring that the board of chiropractic examiners shall not be permitted to examine or issue a certificate to any applicant from a chiropractic school, unless said applicant had been in attendance 3200 hours in the various subjects

covered by its school. This raises the requirements of study from 2400 to 3200 hours.

While no legislation was passed in any way detrimental to the medical profession, it is believed that publicity obtained from the discussion of House Bill No. 391 will accomplish some results, and that it has the endorsement of the general public, especially in consequence of the educational requirements presented for practitioners of the healing art.

### WASHINGTON

#### DRUGLESS HEALERS MUST SHOW CAUSE

Under Senate Bill 58, passed unanimously by the senate and through the house by a vote of 84 to 12, drugless healers in Washington are required to appear before the Director of Licenses at Olympia and show that they have complied with the statute governing educational qualifications. The burden of proof is on the healer. If he has not been in actual attendance at one of the schools giving their so-called college course of three sessions of thirty six weeks each, the Director of Licenses is empowered to revoke. Also if the practitioner of this method cannot show that he has had the preliminary education demanded by the Act, that of a high school education or its equivalent, his license will be revoked.

#### LEGISLATURE CHANGES REVOCATION SYSTEM FOR THIS CULT

Under the provisions of this bill there are two important changes in revocation procedure. In the first place, the burden of proof shifts from the state to the practitioner. In the second place, instead of having a board of examiners in the cult to pass on these issues of revocation, the power is vested exclusively in the Director of Licenses. He has the power to call witnesses to Olympia and the power to call any practitioner who is under suspicion of having used fraud in connection with his diploma and license.

#### PROBABLY 200 AFFECTED

It is estimated that more than 200 of these cultists will be summoned to Olympia for trial. There are probably more than this number of practitioners who have not complied with the law in text or in spirit. Many of them have testified that they have had only a few days training; some have admitted under oath not a single day or hour has been given over to study as prescribed by law. Yet these 200 have been given the right to call themselves "doctor" and to do what amounts to general healing practice.

#### MADE HARD FIGHT

Olympia was the scene of a large invasion of these cultists who were represented by a lobby which ran from 25 to 50 men and women. They protested against the passage of the bill. The legislature was also deluged with telegrams and communications of protest. There was a two-hour debate, featured by the statement of Shields of King county that he "was

tired of doctors bobbing up and down asking for special privileges," and by a statement of Trunkey of Whatcom county that he knew of one of these "doctors" in his county who had graduated from a peanut stand by getting a diploma from one of these fake universities, which he attended but a short time, paying \$240 for his sheepskin. "Think of it," said Trunkey, "peanut vendor—\$240—doctor."

#### PUBLIC HEALTH WINS

Despite the presence of a great lobby and the persistent effort made to cloud the real issues involved, the vote in favor of Senate Bill 58 was overwhelming, 84 to 12. Having already passed the senate, there with unanimous support, it was sent over to Governor Hartley, who promptly signed. Carrying an emergency clause, the law is now in effect and it is expected that Director of Licenses, Fred J. Dibble, in co-operation with the Attorney General, will soon begin the necessary proceedings to revoke all fraudulent licenses.

#### FURTHER RECOGNITION OF OSTEOPATHS IS SOUGHT

Osteopaths at one time secured statutory recognition of osteopathy in Idaho on the ground that it was something apart and different from medicine. When they and their patients found this was not substantiated, they sought the privilege of being admitted to practically the entire medical field by being legislated into non-sectarian physicians. As some wag described a similar situation in another state, they seemed to seek "an act to provide an easy and safe method for crawling into a heretofore honorable profession and to provide a safe and harmless method of pulling the hole in afterward." A circular issued by the secretary of the Idaho association stated, "We do not claim that osteopathy is a panacea for every known physical ailment any more than any other system of therapeutics, but we do claim that where the practice of osteopathy is unlimited it makes good." If they are to be granted the same rights privileges and to be substantially on the same basis as the doctor of medicine, the necessity for the existence of a separate osteopathic examining board is not apparent. This argument was presented when their recent bill was before the legislative committee. This, with others, was convincing to the legislators. Considered on the same basis as practitioners of medicine, let them take the same examination as demanded for medical practitioners in the state.

During the consideration of this osteopathic bill before the legislature the representatives of the Public Health League exercised efficient and convincing zeal and had a large part in producing defeat of the "Idaho Osteopath and Surgeons Act." When the second bill was produced, which was substantially a reproduction of the first under a different title, the same arguments again convinced the legislators that the time was not yet ripe for classing osteopaths and medical practitioners in the same group as if they possessed the same qualifications of education and skill.

## BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

**The Medical Sciences in the German Universities**  
A Study in the History of Civilization. Translated from the German of Theodor Billroth, with an introduction by William H. Welch. Cloth, 292 pp. The Macmillan Co., New York, 1924.

This is a book which appears for the first time in English, although published almost fifty years ago in Germany, *Lehren und Lernen der Medicinischen Wissenschaften*, or "the teaching and learning of the medical sciences."

It has a permanent value in medical education, written by one of the great masters in surgery and equally great as a teacher and investigator in medical science. His famous work on surgical pathology was translated in most civilized languages. Many of the topics discussed in this volume are of just as much importance today and just as unsettled as in Billroth's time. One cannot help suspecting that any work redounding to the former glory of Germany is not to be neglected today, and Billroth lived in the golden age of Germany's medical supremacy. These were the days of Henle, Kolliker, His, Du Bois-Raymond, Ludwig, Hoppe-Seyler, Voit, Virchow, Klebs, Conheim, Traube, Wunderlich, Kussmaul, Von Ziemssen, Leyden, Langenbeck, Thiersch, Esmarch, Von Graefe, Hebra, Politzer, Crede, etc. The glory of these men lives, even if that of their country has departed.

The work is divided into four parts. The first treats of the historical development of medical faculties in Germany, the second, of present methods of teaching medicine. The third considers the student and future physician, and the fourth discusses the teaching staff. The book is written with great vigor and liveliness. The tirade on the Jewish students is rather amusing. "Who have conceived the insane idea that they can earn a living by teaching, who are not seldom inherently queer. There is a prevalent obsession that poor young men who aspire to a medical career in spite of many obstacles must be highly gifted. The assumption is false; the folly that drives these individuals to study is their vanity. It happens quite often in the realm of art and science that altogether untalented people are possessed of infinite patience and an unspeakable mania to achieve. Such empty headed strivers with purblind eyes, hands like lead and brains like clay, with a dictionary knowledge, and a pathetic incompetence, are to be found in large numbers among our medical students."

His reverence for the great medical teacher and the inspiration derived by the pupil, who in turn passes it along to future generations, is most graphically set forth in these pages. It reminds one of the late Sir James Mackenzie who was asked what he considered his greatest achievement in medicine. His reply was, "Thomas Lewis." The book is fascinating as reflecting the genius of one of the greatest medical men, and the various problems discussed have a very present interest in medical teaching today.

WINSLOW.

# Portland Surgical Hospital



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**Practical Lectures.** Delivered under the auspices of the Medical Society of the County of Kings, Brooklyn, New York. 1923-1924 Series, 132 Illustrations and 3 Color Plates. Cloth, 484 pp., 1925. Paul B. Hoeber, New York. \$5.50.

This collection of lectures was delivered before the Medical Society of the County of Kings to mark its hundredth anniversary. The talks were selected on account of the ability of the lecturers and the practical character of the subjects. No formal written papers were presented but the man talked on that which he knew. There is, therefore, no logical relationship or connection between the subjects, as they are on wholly miscellaneous and unrelated topics. Their value is of a high order.

One of the most comprehensive and useful talks was given by Tilney on epidemic encephalitis. He emphasizes the protean forms this disease takes, only limited by lesions in any part of the cerebrospinal nervous system, and varying from brachial neuralgia to a perfect representation of brain tumor. Tilney denied the existence of choked disc in his book on encephalitis and made its absence one of the criteria for the diagnosis of encephalitis. The reviewer took him to task at that time but in this talk Tilney acknowledges that choked disc is seen in encephalitis but he thinks that a bulbous dilation of the vessels in the disc is especially characteristic of encephalitis. There is no doubt that the two diseases most difficult to discriminate from encephalitis are brain tumor and acute poliomyelitis.

Tilney mentions three apparent cases of encephalitis in adjoining beds, but two of them turned out to be tuberculous meningitis and neurosyphilis, a happening that we have all experienced.

Fowler gives a very instructive talk on diagnosis of abdominal tumors. He enumerates the many tumors mistaken for growths of the stomach but there is one he has omitted. Localized tumors of the liver sometimes are seen in cardiac decompensation of myocarditis that will deceive the elect. The reviewer has known of several instances where such patients have been explored by the surgeon. There is a most valuable, and at the same time exceedingly practical lecture by Mosenthal on renal function, in which he shows that various disorders of renal function are of much more importance than the pathologic diagnosis, and that the proper testing of renal function can best be done while the patient is going about and attending to his daily duties. These collected papers are well worth while.

WINSLOW.

**Physical Diagnosis,** by W. D. Rose, M.D., Lecturer on Physical Diagnosis, and Associate Professor of Medicine in the University of Kansas. Fourth Edition. 319 illustrations. Cloth, 755 pp., \$8.50. The V. C. Mosby Co., St. Louis, 1924.

There are some excellent books on physical diagnosis and, unless an author is able to write an incontestably better one, there does not seem to be any reason for adding to our present supply, especially at double their cost. To particularize. The most frequent cause of death in those over middle

age is probably chronic myocarditis, and often accompanying cardiovascular disease. Yet little space is given to this very important and extremely common disease. The existence of high blood pressure, perhaps the most frequent and suggestive sign of myocarditis, is not even alluded to under diagnosis of the condition. Then no mention is made of the presence of a systolic murmur at the base, particularly suggestive, as indicating arteriosclerosis and roughening of the aortic valves or aorta, or dilatation of the aorta, with which myocarditis is usually associated.

Again, in respect to aortic stenosis. The author does not point out that an absent second sound is characteristic of aortic stenosis. On the contrary, we find that in the first stage the "second sound is audible with great purity at the aortic area." Exactly what "with great purity" means is not so evident, unless referring to the examiners keenness of hearing. Then in the later stage the author notes that the systolic aortic murmur is "followed by an impure second sound or by the murmur of aortic regurgitation. If anyone has made numerous autopsies on this rare lesion and observed how the aortic valves have become fused together into one calcified mass, resulting in either a narrow slit or aperture, the presence of a second sound from closure of the valves will be seen to be impossible. In other words, the diminution or absence of a second aortic sound is one of the five cardinal signs and symptoms of the disease. "Without it diagnosis is always uncertain." (Cabot.)

In respect to aortic regurgitation the author is even more culpable in diagnosis. He states that the maximum intensity of the murmur is in the "second right interspace" in the majority of cases, whereas, as any internist knows, it is on the left side of the sternum on the level with the fourth costal cartilage. It is hard to appreciate how such a gross error could be found in a work on diagnosis. Another point of importance omitted is the fact that double murmurs at both aortic and mitral orifices are almost always present in the commonest form of aortic insufficiency (syphilitic). It is unnecessary to discuss the work at greater length other than to felicitate the author on the appreciation of an undiscerning profession that is still ready

WINSLOW.

**Surgical Pathology.** By William Boyd, M. D., M. R. C. P. Ed., F. R. S. C., Professor of Pathology, University of Manitoba; Pathologist to the Winnipeg General Hospital, Winnipeg, Canada. Octavo of 337 pages with 349 illustrations and 13 colored plates. Philadelphia and London: W. B. Saunders Company, 1925. Cloth, \$10.00 net.

The pathology of surgical diseases has its own record of advances and these are no less important than other branches of this department. It is well to have these recorded authoritatively from time to time in text-book form so that the surgeon may receive the greatest assistance in diagnosis and treatment. In this work we have a most helpful book

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of this type and one which is broader in its scope and more logical in its perspective than any with which we are familiar. The clinical picture of many conditions is presented in brief form as are the phases of surgical physiology which may apply. One of its refreshing features lies in the fact that the material on which it is largely based came from the operating rooms and pathologic department of the Winnipeg General Hospital. It is a pathology of the living as well as a pathology of the dead.

FORBES.

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**Manual of Psychiatry.** For the Medical Student and General Practitioner, by Paul E. Bowers, M. D., Examiner in Lunacy, State of California; Lecturer in Neuropsychiatry, Post-Graduate Medical School of the University of California, Los Angeles. Octavo volume of 365 pages. Philadelphia and London: W. B. Saunders Company, 1924. Cloth, \$3.50 net.

This book quite succeeds in fulfilling its object as a manual of psychiatry, for the use of students and general practitioners. The language is simple and to the point, non-essentials have been omitted, and its brevity is to be commended; yet, in spite of brevity the author has not sacrificed fundamentals in any way. Theories, discussions and confusing terminology are dispensed with. There is a special chapter devoted to the relationship of insanity. In preparing this book the author has culled the best of authorities and with his experience as a teacher has presented the subject in a readable manner.

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**General Surgery.** The Practical Medicine Series. Edited by Albert J. Ochsner, M.D., F.R.M.S., LL.D., F.A.C.S., F.R.C.S. Ir. (Hon.). Surgeon-in-Chief Augustana Hospital, Chicago, etc. 1924. 706 pp. \$3. For Series of 8 Volumes, \$15. The Year Book Publishers, Chicago.

The literature of clinical surgery for the past year is now before us in compact form. As with its predecessors, we are made to appreciate the value of an editor of surgical experience. The interpolations and comments of Dr. Ochsner enhance greatly the value of the abstracts. All branches of surgery have received due attention as advances have been made everywhere. These abstracts in Year Book form are of the greatest value to all surgeons.

FORBES.

**Manual for Diabetics.** By Gladys L. Boyd, M. D. (TOR.), Director of Diabetic Clinic and Clinical Assistant, Hospital for Sick Children, Toronto, etc.; and Marion D. Stalmsmith (TOR.), Dietitian to the Diabetic Clinic, Hospital for Sick Children, etc. Introduction by F. G. Banting, M. D. 90 pp. \$1.50. Funk & Wagnalls Co., New York and London, 1925.

This volume is intended for the guidance of patients suffering from diabetes, which disease demands intelligent co-operation between the patient and the physician. There is a chapter on insulin, with others on diabetic food, weights and measures, food values and recipes. It is one of the best books of instruction along this line which can be presented to a patient suffering from this disease.

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**A Laboratory Guide in Histology.** By Leslie B. Arey, Ph. D., Professor of Anatomy in the Northwestern University Medical School, Chicago. Second Edition, Revised. 12mo of 96 pages. Philadelphia and London; W. B. Saunders Company, 1924. Cloth, \$1.25 net.

The purpose of this book is to furnish laboratory instruction in the study of histology. It aims to direct the student systematically in the study of the different tissues and organs under consideration. Its virtue is brevity, system and comprehensiveness. The student will find this book of great assistance in his laboratory work in histology.

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**Organotherapy in General Practice.** 253 pp. \$2.00. G. W. Carnrick Company of New York, 1924.

This volume summarizes valuable knowledge in the realm of organotherapy. Each ductless gland is considered separately with a review of what has been written regarding its therapeutic uses. At the end of each chapter is an instructive bibliography indicating the source of information of all statements presented. From this volume one can ascertain the facts relative to this broad subject and their application in practice.

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**Child Health Library.** 10 Volumes. Robert K. Haas, Inc. New York, 1924.

This little library is composed of a series of ten monographs on various subjects pertaining to raising a baby. Beginning with prenatal care, various stages and conditions of the child are discussed up to the dangers of the school age. These handy pocket volumes, 3 x 4 inches each, have an average of about one hundred pages. All conceivable conditions of the mother during pregnancy and the child during babyhood are discussed in a manner intelligible to any mother.

# NORTHWEST MEDICINE

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and Pacific Northwest Medical Association

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## ADDRESS

DR. WALTER THOMAS WILLIAMSON\*

CALVIN S. WHITE, M.D.

PORTLAND, ORE.

I wish to express my gratitude and appreciation for the opportunity to pay a tribute to a great alienist and a wise counsellor in the medical profession, but above all my friend. Inadequate and imperfect as I know this address will be, I appreciate this opportunity of paying a tribute to his memory. Funerals are intended for the living. The tributes we pay or the flowers we purchase have no possible value to the one who is dead; the only value they have is to those of us who still live.

During the war a great deal of interest was displayed in Red Cross work. Thousands, yes millions of women gave up their afternoons to making dressings, sweaters, stockings, a large proportion of which had no value. It is doubtful if any of the dressings were used in the hospitals and all of the soldiers would have been better off without the sleeveless sweaters, but it had the effect of calling attention to the most important matter before this nation, and it taught a large number of people two very essential lessons—self-sacrifice and industry. It is well that this is true because of the uncertainty of life itself. The very thing we are plan-

ning on today, the following day or next week may be cut short and it is but a moment's journey from the quickness of this life to the silence of death.

"The boast of heraldry, the pomp of power,  
And all that beauty, all that wealth e'er gave,  
Await alike the inevitable hour;  
The paths of glory lead but to the grave."

Dr. W. T. Williamson was born in Petersboro, Ontario, August 6, 1850. His father and his father's brother emigrated from Glasgow, Scotland, and acquired large areas of land from the Dominion of Canada, a great portion of which is still held in the Williamson family. His father was a member of the Church of England and his mother was a Presbyterian. Both his father and his father's brother were great singers. They were probably two of the most noted singers in Glasgow at that time. They had been trained as choir boys and their services were much sought after in concerts and they took a leading part in the surrounding country where they located, not only in musical circles but in religious affairs.

Dr. Williamson's mother was a Tully, the same name as the mother of Dr. Andrew Smith, and it is not at all unlikely that the resemblance resulting in their frequently being mistaken one for another was due to actual inheritance and not merely coincidence. His father's mother was a McAlpin. The McAlpins were long the ruling clan of Scotland and of the blood of Mary Queen of Scots.

Dr. Williamson's early education was of a reli-

\* Memorial Address delivered before the Portland Academy of Medicine, Portland, Ore., March 12, 1925.

gious character and the choice command of the English language which he possessed was acquired from the two textbooks he used very extensively in the early years of his life, the Bible and Bunyan's Pilgrim's Progress. It is debatable whether or not by legislative enactment portions of Scripture should be read each day in the public schools but it is undoubtedly true that the men and women who have not familiarized themselves with this great work have lost a very great deal of the choicest English and the best philosophy and ethics in life. It is apparent that in modern day literature and drama many authors have read no further than the sordid tales of Sodom and Gomorrah. One of Dr. Williamson's favorite quotations was: "A wise man will hear and increase learning and a man of understanding will attend wise counsels."

In early childhood Dr. Williamson became asthmatic and tried all manner of remedies and physicians, going to various places and finally emigrating to Oregon in 1873. For three years thereafter he taught in the public schools in East Portland. He then took up the study of medicine, going to San Francisco for a two years' course. He took his degree in medicine in Toland Hall, which afterward became a part of the University of California.

After graduating in medicine and searching for a place where he would be free from asthma, he finally located in Weston, practicing there for nine years, during which time he did general work and obtained quite a reputation as an obstetrician. He had a small hand, a very genial disposition, one that inspired confidence in the women who needed care, and his services were much sought after. He was called one time to the Dalles to do a forceps delivery on a woman whose son is now one of the most prominent railroad men in the city of Portland. He told me that after a long period of years he received thirty dollars for that service.

Three of his brothers died in early life and two sisters still live on the original land that was acquired by the father from the Dominion of Canada. One of them is eighty-three and the other eighty-one years of age. One of these sisters has the same brilliant education and the same choice knowledge of the English language and gift of expression that Dr. Williamson had.

In 1866 he moved to Salem to be assistant superintendent at the Oregon Institution for the Insane, and served under five different superintendents. He was repeatedly offered the superintendency of this

institution and afterward of the Eastern Oregon Hospital for the Insane, but in each instance he declined because he much preferred the treatment of the insane rather than the executive, administrative and political end of the superintendent's position. He was one of the very few men who succeeded in getting along with the irascible Governor Pennoyer, when he was governor of this state, and whose wish was to discharge Senator Lane, who was superintendent of the institution and give the position to Dr. Williamson who finally persuaded him not to do so.

Dr. Lane told frequently of a patient who was brought into the institution with a large fluctuating swelling of the groin. The man had applied liniments of various kinds until the skin was reddened. The house surgeon plunged a knife into it and was promptly rewarded by an escape of intestinal gas. Dr. Williamson closed the wound in the intestine, did a radical herniotomy, and the man lived with no adverse symptoms.

During twenty-nine years of intimate personal friendship and in a very large number of meetings with him, I never heard Dr. Williamson utter an oath, either as an original expression or in quoting anyone else. One of his quotations was, "He that has a perverse tongue falleth into mischief." I never heard him call anyone a liar, or refer to any statement as a lie. Frequently he would say he did not believe this or that was possible of being true, but whether or not there might be some truth in it, he never gave way to anger or passion.

He had a logical mind and was one of the two fairest men I have ever known. He would listen patiently to a story with which he could not in any sense agree, or to the arguments of someone, which were not founded on fact at all, and with which an ordinary individual could have had no possible patience.

His testimony was never for sale. No judge, jury nor prosecuting attorney ever impugned the honesty or integrity of Dr. Williamson, and in more than half of the cases on which he was called as an expert, he never appeared on the stand either for the prosecution or for the defense. While it is true that very frequently jurors might differ with his opinion as to the liability of the individual who committed the crime, no one ever impugned his statements nor the sincerity of his diagnosis.

He had scant patience with the habit which has become so prevalent in our country during the last few years, of the creation of multitudinous laws, a large number of "Thou shalt nots," and providing

penalties for the violation thereof. Another of his quotations that was very frequently heard was taken from the Presbyterian catechism. "Some sins in themselves, by reason of their several aggravations, are more heinous in the sight of God than others."

He was a counsellor of the State Medical Society and in 1898 was one of the organizers of the Marion County Medical Society. He nominated me for president of that society at that time and, while I was comparatively unknown, merely on the strength of Dr. Williamson's nomination I was elected president and had the unique experience of being elected for three successive terms. During his entire life in Oregon he missed but one meeting of the State Medical Society.

His counsel in the State Medical Society and in the American Medical Association was most sought and the more universally followed. He was an earnest thinker and possessed ripe judgment. All of you who have served on committees with him know there was no matter too trivial for his attention. Whatever the committee assignment might be, he gave it his very best thought and earnest endeavor at all times, and nothing was ever slighted by him.

Like all great men he was gentle and abhorred violence. Another of his quotations was, "Nothing that was ever settled by violence or by force was ever settled right." He deplored physical combat. He was in England at the time of the breaking out of the World War, saw the preparations for slaughter that were being made and came home profoundly depressed, never entirely recovering from his depression. Speaking very frequently of the League of Nations he said: "Why not try anything in the world that can avert force or avert war. Let us at least try." It could very well have been said of Dr. Williamson, as Mark Antony said of Brutus, "He was gentle. The elements were so mixed in him that nature could rise and say to the world, 'there was a man.'"

His advice and counsel will be missed in the American Medical Association. During the period that he served as a trustee he wielded more influence than any other individual in the Association. Dr. McDeavitt, of St. Paul, whom I met in Chicago last year, took me aside and said it was really wonderful and asked me if there were any more men out west like Dr. Williamson. He told me he was the one man to whom all of the warring factions would listen. One of Dr. Williamson's most profound regrets was that he could not attend

the meeting of the Cook County Medical Society in February, which he had numerous and urgent invitations to address, but his physical condition at that time was such as to prevent it.

It is well, perhaps, that there is no definite measure for our span of life. It is well we do not know just when we are going to be called away, because it probably would interfere with all of our plans and make us much less valuable citizens, if we knew at just what time the summons was to come. We would probably be so depressed or busy making preparations for it that we would neglect the ordinary every day duties of life. For this reason I think we are admonished "to so live our lives that when our summons comes to join that innumerable caravan that moves into the silent halls of death," we may, like our late departed friend, leave no loose ends, no unfinished business, so those who come after us can go on without having to unravel the thread, so to speak, but can weave the fabric or build on the foundations we have started.

It is one of the most sober and at the same time cheering thoughts that our influence in life is never lost, that the words we utter, the actions we have done, are never lost, but they go on forever beyond this life and into that boundless space we are pleased to call eternity. It is all important that we shape our acts and influences in life in such manner as will reflect credit on and to our posterity. Dr. Williamson has done this. He need never have erected in this generation any monument or granite stone in order to keep his memory alive with us. I believe every one of us who knew him in actual life feels that he has had on each of us some influence that will tend to make us leave to posterity a better inheritance than we would otherwise have left, and of him it can truthfully be said, "None knew him but to love him, none named him but to praise."

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**Treatment of Arspenamin "Encephalitis" with Sodium Thiosulphate.** R. H. McBride, Iowa City (Journal A. M. A., March 7, 1925), reports this case occurring in a boy, aged 4, after the administration of two 0.35 gm. doses of sulpharsphenamin intravenously and 5 gm. of mercuric chloric intravascularly. He was given intravenously 0.46 gm. of sodium thiosulphate (0.03 gm. per kilogram of body weight) in a 5 per cent solution every three hours for five doses. Later he was given 0.5 c.c. (7 minims) of a 1:1,000 solution of epinephrin hypodermically every four hours for five doses. Caffein citrate in 0.03 gm. (one-half grain) doses was given every four hours for five doses. Fluid was administered by mouth and by rectum, a large amount being taken. Apparently perfect recovery ensued.

## ORIGINAL CONTRIBUTIONS

### THE PARASITIC ORIGIN OF CARCINOMA\*

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BUTTE, MONT.

President of Staff and  
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In 1921 I heard of Dr. Glover's laboratory and clinical research work on carcinoma and in October of that year I visited the doctor in New York and learned from him personally of what he had accomplished in this field. His laboratory work differed most strikingly from any of which I was aware and the clinical results in various cases under treatment were remarkable, especially when the type of cases treated and stages of advancement were considered.

Shortly afterwards I returned to ask for treatment for a case, the microscopic sections from the lesion of which showed it to be a typical squamous cell carcinoma. At my request Dr. Glover cultured the carcinoma organism from this lesion. During the time treatments were being administered I secured specimens which had been obtained at biopsy or necropsy and all of which had been sectioned and diagnosed as carcinoma by competent men. These included specimens from primary lesions, metastases and from so-called recurrences, removed from breast, bladder, uterus, lip, lymph-nodes, prostate, liver; and urine, procured under aseptic conditions from two cases of carcinoma of the bladder; and blood from known carcinoma cases. Dr. Glover demonstrated to me his method of culturing the organism from these specimens.

I was then given the opportunity to culture these same specimens myself, along with additional tissues I removed from carcinoma lesions of the lip, tongue and breast of animals in Dr. Glover's laboratory. From each of these specimens I was able to isolate, and obtain pure cultures of a similar organism. I next subcultured these and made repeated injections of them into the lip, tongue and breast of monkeys, which later developed epithelial tumors with metastases. Afterwards I recovered the same organism in pure culture from these animal lesions. I repeated all of this work, first under Dr. Glover's

direction, and later by following his methods but with the work entirely in my own hands, and always with the same results.

The inoculated animals allowed to die of the disease showed the following characteristics. Soon after the appearance of the growth the animals became weak, gradually lost weight, showed signs of toxemia and died, not from pressure of the growth, but apparently from toxemia. This is in marked contrast to the course of the disease which follows from the subcutaneous inoculation of mice with carcinomatous mouse tissue.

In these experiments all usual precautions against contaminations were observed. All specimens were removed and handled under aseptic conditions and seared before culturing; and no tumor that showed signs of mixed infection, necrosis or ulceration was used. All tubes of culture media were incubated for several days to determine their sterility and all experiments were checked by the use of control tubes and control animals.

#### DESCRIPTION OF THE CARCINOMA ORGANISM AS OBSERVED IN THESE EXPERIMENTS

*Morphology.* The life-cycle of the carcinoma organism\*\* comprises three stages: first, the bacillus stage (figs. 1 and 2); second, the spore or coccus-like stage (fig. 3); third, the spore-sac stage (fig. 4), in which it resembles a blastomyces in appearance, but does not bud so far as observed. The bacilli vary in size; occur singly, in pairs, and in chains; are usually straight, although sometimes slightly curved forms are seen. In the bacilli can be seen small elliptical or coccus-like spores which vary in size and which first appear as small round granules, but which never distend the bacilli (fig. 5). As the spores develop the bacilli become less distinct until they entirely disappear (fig. 6). These spores vary in size and are filtrable, passing through a W Berkefeld filter, which had previously been tested against other unfiltrable organisms. In old cultures that have been kept for months, also in cultures where the medium has dried, small round or pear-shaped spore-sacs occur, among which can be seen a few hyphae; each spore-sac contains spores. When subcultures of this third stage are made on fresh media, the spore-sacs disappear, giving rise to pure cultures of spores in from twenty-four to forty-eight hours; and in from forty-eight to seventy-

\* A synopsis by Dr. Scott of paragraphs relating to laboratory and clinical experiences with carcinoma, abstracted from papers read by him at meetings of the members and guests of the Staff of St. James Hospital, Butte, Mont., June 14, 1924; the Orange County (California) Medical Society, at Santa Ana, Nov. 4, 1924; the Alhambra Branch of the Los Angeles County (California) Medical Society, Dec. 5, 1924; and additional laboratory work recently demonstrated by Dr. Glover.

\*\* The morphology and biology of this organism were given by Dr. Glover, and the stained organism in its three stages demonstrated under the microscope by him at a meeting of the members and guests of the Staff of St. James Hospital, Butte, Mont., June 14, 1924.

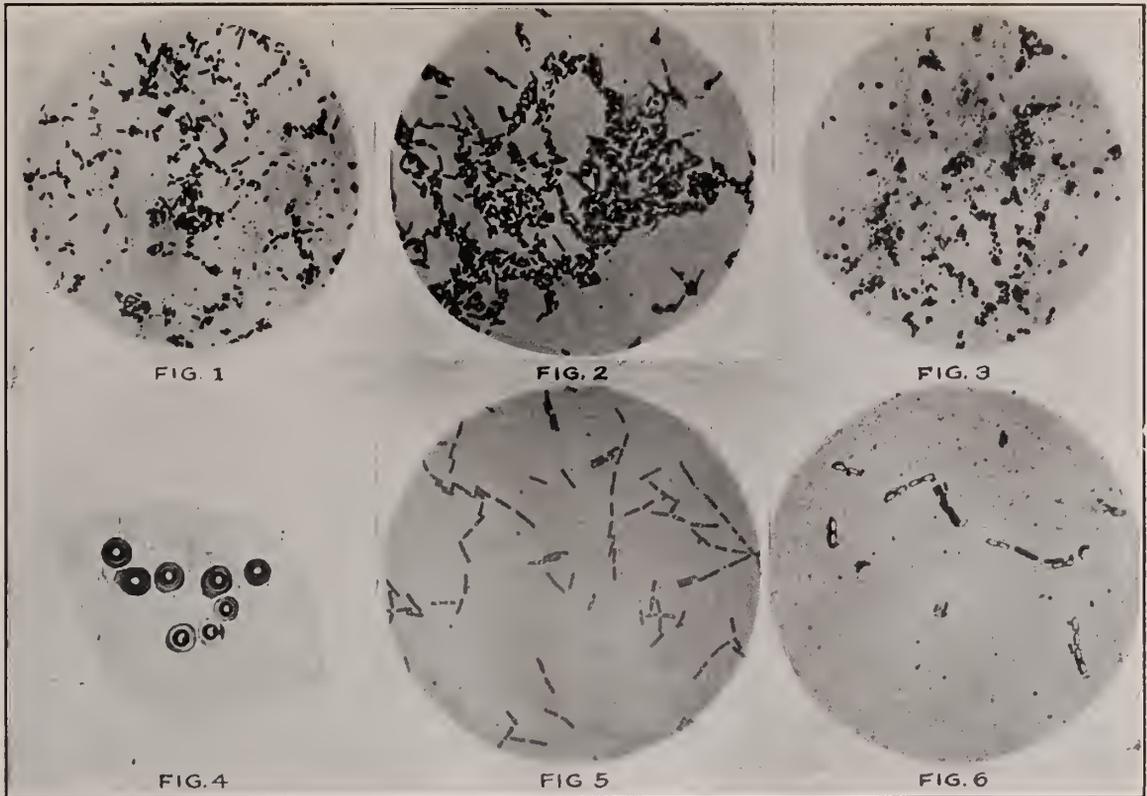


Fig. 1. Small young bacilli.

Fig. 2. Bacilli before spore formation.

Fig. 3. Spores of varying sizes.

Fig. 4. Spore-sacs.

Fig. 5. Bacilli with coccus-like spores inside.

Fig. 6. Spores enlarging along long axes of bacilli without distending bacilli.

two hours they give rise to bacilli. The organism is Gram-positive, retaining the gentian-violet stain.

*Biology.* The organism grows best under aerobic conditions; when grown under anaerobic conditions, it usually persists in the coccus form which quickly goes on to spore-sac formation. The bacilli are motile and liquefy gelatin; they grow best at a temperature of from 35° C. to 37° C. In the spore-formation stage the bacillus loses its motility. The spores are resistant to outside influences. They withstand an exposure to dry heat for one hour at 90° C. but are killed by an exposure of fifteen minutes to live steam under ten pounds pressure. They are killed by the action of 5 per cent solution of carbolic acid for one hour.

When the organism is grown in fluid media at a temperature of 35° C. to 37° C., it forms a fine pellicle of grayish-blue color which will drop to the bottom of the flask on shaking or handling. During the growth of the organism a gas is given off which has the penetrating odor characteristic of clinical carcinomata. This is more marked when the organism is growing in the fluid media, when it can be detected immediately upon opening the incubator door. On about the second or third day

after the fluid medium has been inoculated with the organism, the medium takes on a yellowish appearance which gradually increases until the seventh day. Chemical analysis shows that this change of color is due to the breaking down of the sulphates in the medium into neutral, unoxidized or free sulphur. This probably accounts for the peculiar yellowish appearance of the skin, as seen in cachectic cases of carcinoma, where the neutral sulphur is increased and not all eliminated from the body but is retained and deposited in the skin. This also probably explains the increase in neutral sulphur in the urine of carcinomatous patients.

The organism produces a toxin of low potency which reaches its maximum strength from the seventh to the tenth day and which deteriorates on keeping, and is affected by exposure to light, heat or oxygen. It appears from animal experimentation that the absorption of this toxin causes the loss of weight and the weakness seen in advanced carcinoma cases. When the toxin is injected into horses in appropriate doses over a given length of time, it stimulates the production of an antitoxin which will neutralize the toxin.

When 1 c.c. of this filtered toxin, to which  $\frac{1}{2}$

per cent by volume of carbolic acid has been added, is injected subcutaneously into full-grown white mice, it kills the mice in from twelve to twenty-four hours. The carbolic acid is added to the filtered toxin to kill those organisms that have passed through the filter,  $\frac{1}{2}$  per cent being sufficient for that purpose, as the vitality of the organisms has already been lowered by their own toxins. The killed mice show edema at the point of inoculation and inflamed suprarenals, while mice inoculated with an equal amount of fluid culture media show no effect at all. It appears that it is this toxin which induces the cell proliferation in carcinoma. In stained specimens of carcinoma tissue the coccus form of the organism can be seen in the epithelial cells, and usually unevenly distributed; this may explain the asymmetrical hyperchromatic and hypochromatic mitoses seen in carcinoma.

#### AGGLUTINATION TEST

The serum used in these tests was from horses which had been immunized against human carcinoma cultures by repeated injections, over a given length of time, of strains of the Glover microorganism obtained from human carcinoma specimens. Two forms of this serum were used: (1) Serum as drawn from immunized horses without being concentrated or refined, (2) serum from immunized horses, which had been concentrated and refined by fractional precipitation with ammonium sulphate.

A number of different antigens were used in these tests, viz., various strains of human carcinoma organism, strains of mouse carcinoma organism, colon bacilli, Bulgarian bacilli, diphtheria bacilli, typhoid bacilli, pneumococci, streptococci and staphylococci, also hay bacilli and potato bacilli.

The results obtained in these tests were as follows:

1. The human carcinoma antigen was agglutinated by a dilution of from 1:5,000 to 1:10,000 of the unconcentrated and unrefined Glover serum.

2. The human carcinoma antigen was agglutinated by a dilution of from 1:25,000 to 1:30,000 of the concentrated and refined serum.

3. The strains of mouse carcinoma antigen were agglutinated by these sera in dilutions of from 1:400 to 1:1,000.

4. Other pathogenic antigens were not agglutinated by either of the sera beyond a dilution of 1:10 except the colon antigen which was agglutinated in dilutions of 1:25.

5. The nonpathogenic antigens were not agglutinated by the serum in either form.

6. Various normal horse sera agglutinated the carcinoma antigens in varying dilutions up to 1:20.

#### PRECIPITIN TEST

In this test an organism-free, old, standard toxin was used in 1 c.c. amounts (the lethal dose for a full grown white mouse) against various definite amounts of the Glover antitoxin. The carcinoma toxin was precipitated in from 1:30 to 1:40 dilutions of the antitoxin. Various normal horse sera did not precipitate the carcinoma toxin.

#### FERMENTATION TEST

In carrying out this test a one per cent and a two per cent solution of the various sugars in beef extract broth, with the reactions fixed from pH. 7.2 to pH. 7.8, were used after the solutions had first been sterilized in an Arnold sterilizer at full steam for twenty minutes on three consecutive days. One set of these sugar solutions was inoculated with loops of pellicle from the fluid media, the other portion with cultures from the solid media. These cultures included various strains of the human and the mouse carcinoma organism. The inoculated solutions were then incubated, along with controls, at 37° C. They were examined after twenty-four and

Fig. 7. Carcinoma of breast.

Fig. 7a. Section from Metastasis in animal, fig. 7. Low power.

Fig. 8. Sternum removed, showing metastases in both axillae and along lower thoracic spine. Primary in breast.

Fig. 8a. Section from metastasis in fig. 8. High power.

Fig. 9. Carcinoma of lip. Note no metastasis below clavicle.

Fig. 9a. Shows mitoses with prickle cells, without pearl formation. From fig. 9. High power.

Fig. 10. Carcinoma of lip. Note no metastasis below clavicle.

Fig. 10a. Section from animal in fig. 10. Low power.

Fig. 10b. From fig. 10. High power of whorl of squamous cell.

Fig. 11. Carcinoma of breast.

Fig. 11a. Animal from fig. 11 with sternum removed to show metastasis along spine; also rupture of thoracic aorta.

Fig. 11b. Metastasis from fig. 11. Low power.

The primary carcinomatous lesions of animals in figures 7, 8, 9, 10 and 11 (as well as the primary lesions of many hundred other animals of various species used in this work) were all produced by repeated injections of pure cultures of the Glover microorganism. This microorganism was later isolated from these lesions and from the metastatic tumors resulting therefrom, and was grown again in pure cultures.

In figures 9 and 10 note that there are no metastases below the clavicles. This is true of other animals where carcinomata were produced on the face or head and is quite strikingly characteristic of carcinomata similarly located in the human.

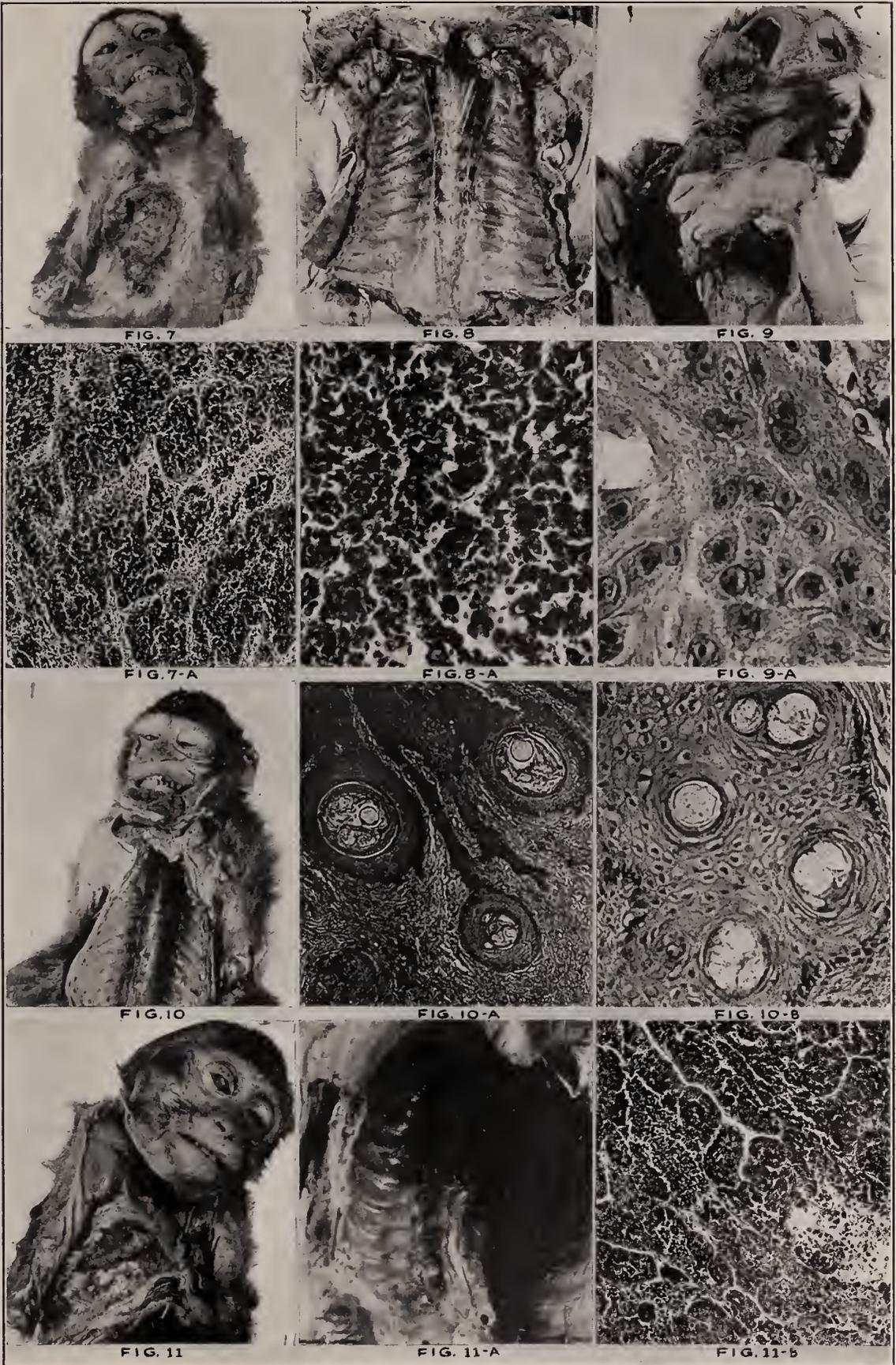


FIG. 7

FIG. 8

FIG. 9

FIG. 7-A

FIG. 8-A

FIG. 9-A

FIG. 10

FIG. 10-A

FIG. 10-B

FIG. 11

FIG. 11-A

FIG. 11-B

forty-eight hour intervals, and the following results were noted:

1. Human strains of the carcinoma organism fermented the following sugars: dextrin, dextrose, galactose, inuline, lactose, levulose, maltose, mannite, nutrose, raffinose, saccharose, salicin and xylose.

2. Mouse strains of the carcinoma organism fermented dextrose, galactose, lactose, levulose, maltose, mannite and xylose.

3. Granatose was not fermented by either the human or the mouse strain of the organism.

4. No change was noted in the control tubes.

#### CARCINOMA ANTITOXIN

In the preparation of the antitoxin young healthy horses are used which give a negative glanders test. At the present time the horse is first injected with 15 c.c. of the antitoxin; two days later 10 c.c. of toxin is injected subcutaneously. (In the early work the toxin was injected subcutaneously and the organism intravenously, alternating each week). These injections are repeated twice a week for the first month, then once a week with intervals of rest. The amount of toxin is gradually increased until a moderate-sized injection is reached. The rate of increase of the toxin dosage is controlled by the temperature, reactions and general conditions of the horse.

After three months test bleedings are taken from time to time. When the antitoxin has reached the desired potency, which is determined by animal tests, the horse is bled. A sterile sharp-pointed cannula is inserted into the jugular vein; the blood is carried by a sterile rubber tube into large flasks, held slanted, and allowed to clot. After three days the serum is drawn off into sterile bottles by means of sterile glass and rubber tubing. It is next passed through a fine, sterile Berkefeld filter into sterile bottles. The serum is tested for potency and sterility. Tricresol 0.3 per cent is used as a preservative.

Recently this antitoxin has been concentrated and refined by fractional precipitation with ammonium sulphate. By this concentration and refinement the potency of the antitoxin is brought up to about four times that of the previously used unconcentrated and unrefined antitoxin.

#### DIAGNOSTIC TEST FOR EARLY CARCINOMA

At present work is being done on diagnostic tests for early carcinoma. From the research work it appears that the diagnosis of early carcinoma may be determined by one of the following methods.

1. By blood cultures which we know from research work can be made as the organisms are in the blood, we think as a bacteremia.

2. By a complement fixation test similar to the Wassermann test, but which differs in that the organism is used as the antigen instead of beef heart.

3. By agglutination tests.

4. By precipitin tests.

Tests are now being made to determine which of these methods is the most accurate and most easily handled by the clinician. As the comparative simplicity and accuracy of the various tests will determine which shall be adopted, the results of a large number of experiments must be available before final selection is made. In the near future a report covering the research work along these lines will be given.

#### TEST FOR SUSCEPTIBILITY TO CARCINOMA

Experiments are being made to learn how accurately we may determine by clinical tests the relative susceptibility of different individuals to carcinoma infection. In these tests small quantities of a diluted old standard toxin are injected intracutaneously (technic similar to the Schick test for diphtheria susceptibility), the tests being controlled by toxin which has been prepared by heating to just above the heating point for destruction of the toxin.

#### WORK DONE ON IMMUNITY TO CARCINOMA

In Dr. Glover's work on immunity, animals were inoculated at intervals of once a week for a period of three weeks with an old standard toxin, which had been partially neutralized by the addition of antitoxin. These animals were observed for three months. At the end of that time these animals, along with an equal number of healthy control animals, were inoculated with a fresh toxin, the lethal dose of which had been previously determined. The control animals, which were given lethal doses of the toxin, all died in from one to three days. The immunized animals, which were given one and one-half times the lethal dose of the toxin, did not die. We feel confident that these animal experiments will form the basis for the production of immunity to the disease in the human, and at present further work is being carried out along the lines of these tests. Results already obtained encourage us in the hope that it will be but a comparatively short time until carcinoma will be placed on the lists of preventable diseases, prevention being accomplished through the establishment of an immunity to the carcinoma organism.

## WHEN THE ABDOMEN SHOULD NOT BE OPENED\*

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The expression of this title in the negative does not mean that the writer is not thoroughly in sympathy with prompt operation in acute abdominal conditions. As a matter of fact, there is no longer any opportunity for discussion on that point. It is well, however, to use great care in diagnosis because there are many border-line conditions which require the most careful judgment as to when and what to do. There is no one who questions the advisability of prompt operation in a case of acute appendicitis, perforation anywhere in the gastrointestinal tract, an ovarian cyst with a twisted pedicle, a serious obstruction, or strangulation of the bowels. Too much care, however, cannot be used to determine the exact condition previous to operation because there are many conditions with border-line symptoms which are made distinctly worse by such procedure.

The term "acute abdomen," which has come into vogue recently, seems to me an unfortunate term because it apparently gives the surgeon a blanket license to perform an operation for any symptom or group of symptoms involving the abdomen. The marvelous improvements in surgery have made the operation of opening the abdomen a comparatively safe one in a normal patient. However, it does not mean that it is safe to open the abdomen, when the patient has something wrong foreign to that region. In fact, surgery has become so safe that it is dangerous.

When I look back upon the thirty-six years in which I have been engaged in medical work I sometimes stop and wonder, if the sum total of our results in operative surgery has been really beneficial to humanity. This may seem a strange statement but when you come to vision those early days, when ovaries were removed without reason, it is difficult to forget the nervous wrecks that resulted. In those days, the slightest indication in the pelvic region apparently called for removal of the ovaries. It became a panacea for insanity, and was the common operation used for uterine fibroids. From this circumstance, also, the operation of castration for enlarged prostate had its vogue. As most of our surgeons were men, however, rather than women, the run on testicles was very much shorter than that

on ovaries. It has always seemed to me that the best test we can give in deciding upon any operative work is whether we would like to have the same thing done for us, if we were similarly placed as the patient.

The profession had hardly recovered from the mutilating operations on the sexual organs when the appendix took the field. This is an organ, however, that could be attacked usually without harm to the patient, but even here the operation became so safe that it became dangerous, not from the removal of the appendix itself, but from associated conditions which were not properly diagnosed.

In enteroptosis it was found that the right kidney could usually be palpated and was found to be more movable than the left. Then came the rage for stitching up the right kidney and sometimes both of them. It took a few years of bad results to teach the profession that this was a bad procedure, and then they were switched off onto gastroenterostomy, and this held sway until a good proportion of our neurasthenic patients had secured a new route from the stomach to the small intestines. By the time that we had learned to segregate properly our patients, and to eliminate the neurasthenic from this procedure, the field of battle was changed so that some relief was given to the abdomen, but in consequence the limbs had to suffer because of the indiscriminate use in fracture of the Lane splint. These are just a few examples of the indiscriminate application of surgery without proper diagnosis and mature judgment.

If this surgery had not been done, it might be well to note what would have happened. In the case of the ovaries most of the acute pelvic inflammations would have recovered. Many of the cystic conditions would have given no inconvenience. There would have been an occasional case of malignancy and death. In the case of the appendix there would have been a few deaths from perforation and peritonitis, and many rather serious complications from abscess. I say a few deaths advisedly because of the great number of appendices removed during the period of activity in appendix operations.

Getting away from the abdomen, there is no doubt but that there are many patients still suffering from the effects of Lane splints for the comparative few who were benefited, so I believe that, if anyone takes a sober view of surgery for thirty-five years, he must be pessimistic about the total good in balancing the total harm. Surgery must develop in the future, and we are thankful for the work of

\* Read before Eastern Oregon Medical Society, Bingham Springs, Ore., July 29, 1924.

hospital standardization which has brought about revolutionary changes, and has done away with many unnecessary operations.

When we look back on the history of medicine and remember the great hold that homeopathy had on the people (and we know that homeopathy had just one virtue and that was that it left the patient alone), and remember the heroic treatment of the regular physician of that day, we know that the public sympathy and support of homeopathy was a revolt against the heroic and harmful treatment of the regular profession. So in our generation with surgery. While it has made wonderful strides, and there are wonderful opportunities for the future, it behooves us as physicians and surgeons to give the very best in us for careful diagnosis and thoughtful consideration and judgment in our surgical work, because during this generation of much helpful surgery the community itself has revolted and as a consequence we have such cults, as christian science, chiropractic, sanipractic, osteopathy all flourishing.

The following are four definite conditions when the abdomen should not be opened: (1) Absence of a surgeon capable of handling any complication met with in the abdomen, (2) absence of a capable assistant, preferably one who can care for any complication, (3) absence of a hospital with proper facilities, (4) absence of an abnormal condition that can be benefited by such an operation.

From my own experience I wish to mention briefly a few illustrative cases, first, exemplifying the statement that there should be present a surgeon capable of handling any complication met with in the abdomen.

I was called to see a patient almost moribund, with a history of the appendix having been removed a month before. The history showed definitely that the appendix had been removed, when the cause of the trouble was a perforating duodenal ulcer which was not repaired, and the continued leakage finally killed the patient. This instance could be multiplied many times by any experienced surgeon. The removal of the appendix, of course, is a simple matter and could be done by almost anyone, but the surgeon should be capable of recognizing and caring for the perforated ulcer of the duodenum.

Another case illustrating this same point:

A female patient about thirty-five years old was referred to me by Dr. J. W. Thomson, of Vancouver, B. C. He had operated upon her and found a tremendous number of adhesions. This was in January, while she had been operated upon in Seattle the previous November. At the latter operation the appendix was removed and drainage inserted. Dr. Thomson was unable to do much for her because she was in a very serious condition. She was still in bad shape when she came to me with irregular fever and a rapid pulse. She was also very thin.

I operated in April and found an ovarian cyst on the right side which broke and I did not try to enucleate it. In separating adhesions between the intestines I entered a sack with a large amount of seropurulent fluid with small flocculi in it. Drainage was inserted and in a few days the patient developed a fecal fistula. Her temperature came to normal, her appetite improved and she was soon in a much better condition. The fecal fistula did not close and when Dr. Deaver came to Seattle in July he examined her and later operated and found a tremendous number of adhesions, on account of which it was necessary to resect a large amount of the intestinal tract, including part of the ileum and colon. In separating these adhesions he found a point on the right side where a psoas abscess had ruptured. The patient did not recover from the shock of this operation.

This ruptured abscess was not recognized but probably an unoffending appendix was removed at the first operation in November, and the only benefit given to the patient at that time was drainage. It is unfortunate that the first operation in Seattle was not done by a surgeon of experience who would probably have learned the true source of the trouble, and at least have given the patient a better opportunity for recovery.

Illustrating my statement that the abdomen should not be opened in the absence of a hospital with proper facilities I wish to report as follows: A patient had previously been operated upon for appendicitis. On account of pus collections in the abdomen it was necessary to operate again. This patient was in what is listed in the telephone and city directories as a hospital, and there was a big sign on the outside of the building giving the name of the hospital. However, when we washed our hands for the operation we did so under a cold water faucet at the kitchen sink, and there was no hot running water. Other facilities about the hospital were about on a par with this. This exemplifies what I mean about operating in the absence of a hospital with proper facilities.

Among the diseases that sometimes lead the surgeon astray into performing an operation in the absence of an abdominal condition that can be benefited by such an operation, we might mention typhoid fever, pneumonia, acute endocarditis, tuberculosis of the spine, locomotor ataxia, ureteral calculus, inflamed lymphatic glands, abnormal position of the uterus without very definite symptoms due to such displacement, acute salpingitis, many comparatively trivial disturbances of the pelvic organs of the female, such for instance as a very small fibroid causing no symptoms, neurotic patients with neurasthenic symptoms only. And here I would almost be willing to include chronic appendicitis. Of the

diseases mentioned above I would like to mention very briefly cases illustrative of some of these conditions.

The symptoms of typhoid fever will sometimes be sufficiently deceitful to lead one to remove the appendix. On account of being urged by the family physician, but with some misgivings, I once removed such an appendix after several negative Widal's and continued tenderness in the right iliac fossa. The patient made an uneventful recovery but the Widal became positive a short time after the operation.

The psoas abscess case mentioned above is a good illustration of tuberculosis of the spine, and while writing this paper a young woman about thirty years old came under my care with a history of tuberculosis of the spine, but with very definite tenderness over the appendix. She was a rather nervous patient, however, and her leucocyte count was low and no operation was performed. The x-ray showed, instead of a tuberculous spine, a congenital deformity of the spine.

The following case of acute endocarditis was so puzzling for so many days that I wish to report it a little more fully.

A university student was referred to me by Dr. D. C. Hall on January 14, 1922. He gave a history of diffuse joint trouble Jan. 10, and it persisted in the left ankle so that on Jan. 13 his ankle was sore enough to cause difficulty in walking. On this date he became nauseated and vomited several times and had pain in the abdomen centering about the umbilicus. He had some headache since Jan. 1. He had had scarlet fever in 1919 and severe tonsillitis in the summer of 1921.

When he came to the hospital his abdomen was tender, more particularly in the region of McBurney's point and it was distended. His leucocyte count was 32,800 with polys. 92 per cent. His urine contained some albumin, granular and hyaline casts and a trace of acetone. On the 15th his leucocyte count was 24,500, and polys. 87 per cent. On the 16th his leucocyte count was 32,600 and polys. 88 per cent. On the 18th it was 37,500 and polys. 95 per cent. On the same day at 6 p. m. it was 28,000, and 91 per cent; on the 20th 31,600, and 92 per cent; and on Feb. 2, 24,000 and 88 per cent. His Wassermann negative on Jan. 20 and 21. Blood culture negative on the 23rd.

His temperature on admittance was 101.6° and the next day 102.6°. For three days it ranged from that point down to 100.2°, and did not get to normal until the 19th, the same day being above 100°. It ranged then between 100° and 102° for several days. His pulse was 68 and irregular on admission and increased gradually until the 16th, when it was 118 and then ranged near 100 some days. His respiration on admittance was 28, but the next day was a little lower, while on the 16th it was 40 and on the 20th was 55. His blood pressure on admission was systolic 120, diastolic 65.

For the first few days after his admission this young man was studied with the greatest care to determine whether or not an operation was indicated. The picture of a man with tenderness over the appendix, distended abdomen, vomiting and the high leucocyte count and differential certainly pre-

sented a condition that at first glance indicated an operation for acute appendicitis. Upon looking into this more carefully, however, we found that the leucocyte count and temperature were too high. The pain and soreness in his joints previous to the pain in the abdomen also showed that there were at least some complications. As the case developed, it finally became very plainly an acute endocarditis with possibly an associated pericarditis. He finally left the hospital on February 12, with a temperature of 98°, respiration 24, pulse 106. It was a considerable time later before he was able to be around, but he finally made a good recovery.

Many times I have been puzzled by a right ureteral calculus. One patient was sent to me from the country as a case of acute appendicitis or obstruction of the bowels, and by the time he arrived in the hospital I found blood in the urine and his symptoms soon cleared up, showing an unmistakable diagnosis of ureteral calculus.

A rather puzzling case came under my observation about one year ago.

A big husky, well developed boy about nineteen years old, weighing something like 180 pounds, had a broken hip and I put him up in a cast in the Whitman position. While he was in the cast he had pain in the abdomen, vomited and was tender on the right side of the abdomen—leucocyte count 15,600, polys. 80 per cent.

It was difficult to examine carefully and I disliked the necessity of an operation. In a day or two his symptoms disappeared, but again two months later, after the cast was removed, they reappeared with leucocytes 14,600 and polys. 80 per cent. The entire leg was covered with small pimples, probably due to a staphylococcus infection. At this time I found tender glands in the groin and could follow the tenderness up over the side of the abdomen. This was undoubtedly a case of the chain of lymphatic glands on the right side of the abdomen being inflamed. These symptoms disappeared as the condition of the leg and the glands in the groin improved.

A young woman called at my office for examination and after it was completed stated that she had been told she had appendicitis and must have an operation. She did not have acute appendicitis, and I was very much in doubt whether there was any disease of the appendix. I sent her to Dr. H. B. Thompson for gastrointestinal x-rays. He started the pictures and she was to return the next day for completion of the examination. In the evening her doctor called me on the telephone, stating she was having pain, that it was an emergency case and he would operate that night. I made inquiry the next day and I know from his own statements that there was practically nothing wrong with that appendix.

In conclusion, however, to reiterate, I do not wish to be misunderstood, when I place such a distinct ban on unnecessary operative procedure, for I am just as ardently in favor of prompt operation when it is indicated. As I have observed all kinds of surgery, I have come more and more to believe that an operation should never be performed by any surgeon, unless he can in his own mind substitute himself for the patient and then decide that he would like to have the same operation under the same conditions performed on himself.

## RECONSTRUCTION OF BILE DUCT\*

CHARLTON E. HAGYARD, M.D.

SEATTLE, WASH.

Mrs. M. aged 52, has had four children and few serious illnesses. Four years ago she was large and well, weighing 198 pounds. About this time she began gradually to lost weight, until she weighed about 138. Two years ago it was discovered that she had diabetes. Since then under treatment has been fairly well, but has not been very careful about diet. September 14, 1923, she had a rather sudden attack of pain in the upper abdomen. Pain, soreness, vomiting and prostration increased, until she entered the hospital three days later.

On admission she appeared very ill. Complained of great pain across the upper abdomen, soreness, nausea, vomiting and occasional chills. Tongue was dry and brown, icteric tinge to sclerae. Was mentally dull. Temperature 102°, pulse 110. Abdomen was distended and a large tender mass could be felt in the right subcostal region. Leucocyte count was 27,100, polys. 90 per cent. Urine showed 10 per cent sugar; diacetic acid in large amount; acetone very large amount.

Diagnosis: Acute obstructive cholecystitis, with severe diabetes and marked acidosis.

Under the direction of Drs. J. W. Crook and Geo. Miller she was given insulin, and repeated intravenous injections of saline solution. Pain, vomiting and occasional chills persisted for several days, but general condition improved.

First operation December 26, 1923, under novocain anesthesia disclosed a very large, intensely inflamed gallbladder, plastered over with fibrinous exudate and a thick edematous omentum. Considerable cloudy fluid and much fresh fibrinous material in upper abdomen. The distended gallbladder contained one large stone fixed in the neck, and in the wall, covered by the adherent omentum, was an area of gangrene as large as a quarter. The gallbladder was removed and coffer dam drainage instituted.

For several days there was free drainage of bile which gradually grew less, and in about four weeks the wound healed. Her general condition was good, diabetes under control. Stools were dark green or brown.

About six weeks after the operation she began to have brief spells of jaundice. A few weeks later this had become permanent with acholic stools.

She remained in fairly good health up to the time of the second operation, April 5, 1924. At this time we have a patient, whose diabetes is fairly well controlled, but who is deeply jaundiced and obviously has a complete obstruction of the common bile duct. Her general condition is fairly good. The abdomen is not distended or tender and shows only a linear scar, indicating the site of the former operation. She has been prepared by the administration of large quantities of fluids, increased carbohydrates with insulin, and intravenous injections of calcium chloride solution. A preliminary narcotic has been given and she is quite sleepy.

With novocain anesthesia the abdomen is opened and we find the viscera in the upper right side all adherent to the anterior abdominal wall and to each other, so that they are indistinguishable. The edge of the liver is determined and difficult dissection undertaken through dense fibrous adhesions, following the groove in which the gallbladder had formerly lain. Finally, close to the liver, a short bud of hepatic duct is exposed and opened. After a few minutes bile flows.

The common duct consists of a firm cord buried in a dense fibrous mass. It is apparently useless

for purposes of reconstruction. One end of a rather large catheter is sutured into the hepatic duct. An area of duodenum is dissected free and the distal end of the catheter passed through a small opening into the lumen, after the manner of Witzel (Figs. 1 and 2). The exposed tube between the hepatic duct and the duodenum, about 3 cm. in length, is surrounded by omentum and peritoneum from the posterior wall. The abdomen is closed, leaving a small cigarette drain. The operation is completed under local

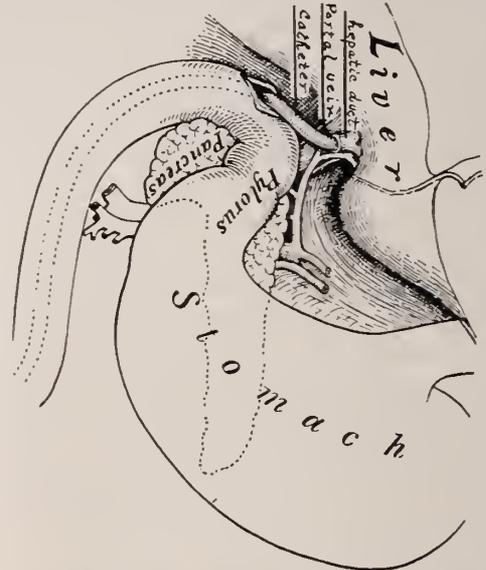


Fig. 1. Reconstruction of bile duct. (From Deaver, Ann. Surg.)



Fig. 2. Catheter from hepatic duct to the duodenum. Greater portion in the intestine.

anesthetic, gas having been given for only a few minutes to control a period of retching.

Postoperative history: Her convalescence was remarkably free from trouble. She vomited once, the vomitus containing bile, proving the patency of the tube, and in a few days stools contained bile and the jaundice began to improve. At no time was there drainage of bile, and the wound soon healed. A

\* Read before Providence Hospital Clinic, Seattle, Wash., April 5, 1924.

radiogram taken before she went home at the end of two weeks showed the catheter in place.

Recently, about six months after the operation of reconstruction of the duct, the patient came in for observation. She reported that after leaving the hospital her jaundice rapidly cleared up, but during the first two months she had several brief attacks of pain, chills and jaundice. Since then, however, she has had no pain or distress and her skin has remained clear. Her abdomen is free from soreness, but having become careless about her diet, she has some manifestation of diabetes. An x-ray examination, rather to my surprise, showed no evidence of the rubber tube which must have softened and passed without her knowledge.

#### COMMENT

It was with some degree of hesitancy that operation on the patient was contemplated. Patients with either diabetes or jaundice are not considered good risks and it is considered good surgical judgment to operate only when absolutely necessary, and to limit operative procedures to essential work.

The preliminary preparation of these patients is of great importance and much has been added to our knowledge of this phase of surgery. Proper control of the diabetes is all important and this aspect of the subject I have asked Dr. George Miller to discuss.

#### JAUNDICE

It has long been well known that jaundice increases operative mortality. Walters studied a series of cases that had died, following operation for obstructive jaundice and found that most of them had died from intra-abdominal hemorrhage, probably slow oozing from traumatized liver surface. To shorten the coagulation time he recommends intravenous injections of calcium chloride solution, 5 to 10 c.c. of a ten per cent solution daily for three days preceding the operation. He later reports thirty-four patients operated on for marked obstructive jaundice, who had been prepared in this way, none of whom died of hemorrhage. Other dangers are impaired liver function, which seems to be associated with an existing low glycogen content, and uremia from damaged kidneys. To anticipate these dangers forcing of fluids and food, particularly carbohydrates, is recommended.

#### ANESTHESIA

In diabetic patients or in those having impaired liver or kidney function, the result of the operation

may be determined by the anesthetic used. Local or block anesthesia with novocain is the safest; nitrous oxygen and oxygen is next, and then ether.

#### TECHNIC

Resection of the strictured area with end to end suture of the duct has been done with success. There is some tendency for stricture to reform at the point of union. The use of the T tube in these cases has some disadvantages, as removal of the tube has resulted in bilious fistula or damage resulting in stricture formation. In one case in which I did a direct repair for injury, I used an improvised T tube with success, the cross branch being composed of very soft rubber.

Hepaticoduodenostomy or direct implantation of the duct into the duodenum is the ideal operation for many cases, where it can be carried out. W. H. Mayo's plan is to utilize a small flap from the wall of the duodenum in making the anastomosis. C. H. Mayo has described a double flanged R tube, one end of which is inserted into the hepatic duct, while the other is placed through a small opening in the duodenum or stomach.

Jackson reports a successful case of implantation of the duct into the jejunum. The use of the colon is not advised, as Weideman has shown in dogs that fatal ascending infection follows. Walton in reforming the duct utilized a flap from the wall of the duodenum, emphasizing the advantages of a tube lined with mucous membrane. Where the end of the duct cannot be easily brought in contact with the duodenum, some method of reconstruction of the duct is necessary.

Sullivan, in 1909, described a method of experimental bile duct reconstruction in dogs, fixing one end of a rubber tube in the hepatic duct, the other into the duodenum through the stump of the common duct if possible, otherwise through a small opening in the wall of the duodenum. The tube is then covered with omentum. He states that in dogs the passage is permanent, without tendency to contraction. He reports one case done on a man who was well eight years later.

L. L. McArthur has reported seven successful cases done in a similar way. He uses a fixation thread of waxed silk, brought from the tube to the surface of the body. When desired, the thread is cut, and the tube passes through the intestine in from three to seven weeks. In the case here reported the tube softened and passed without the

patient's knowledge. On examining the literature I find others have had the same experience.

This case was difficult on account of the extensive and firm adhesions and the complicating diseases. I fixed the tube by linen sutures in order that it might remain for some time. It is quite evident, however, that the reconstructed duct is functioning satisfactorily.

#### COMMENT

GEO. C. MILLER, M.D.

Without entering into a discussion of the relationship between gall bladder disease and diabetes, I wish to present briefly the method used in preparing the patient for operation.

When first seen she had, in addition to the signs of acute inflammation within the abdomen, 10 per cent of dextrose in the urine, large amounts of acetone and diacetic acid, and blood sugar to the amount of 292 mg. per 100 c.c. She has known of her diabetes for the past two years and during this time has dieted at intervals, never with any accurate knowledge as to the quantity or value of the food consumed. It is reasonable to suppose that her urinary findings and blood sugar content have been materially increased by the infection now present.

In deciding on the preoperative preparation of a diabetic, we should be guided more by the pathologic condition requiring surgical intervention than the laboratory findings, tending to show the severity of the diabetes. In other words, do not delay the operation in an acute abdomen to rid the urine of sugar or the ketone bodies. The infection is the probable factor in increasing the acidosis and decreasing the tolerance of your patient for carbohydrate food, and the sooner she is rid of her inflammatory focus or the purulent product of that inflammation the more quickly will the glycosuria and ketonuria disappear under appropriate treatment. On the other hand, if no emergency exists, measures may be taken that materially decrease the operative risk.

In the case at hand we are dealing with a recurrence of an old cholecystitis. In spite of the high leucocyte count, clinical signs are not conclusive as to the need of immediate operation, consequently we will begin by ordering carbohydrates to combat the acidosis and that we may begin to store up in the liver the glycogen which will be sorely

needed in the first postoperative days. It is essential, too, that the carbohydrates be in a form easily assimilated and for that reason orange juice or cooked cereal may be used. Carbohydrate 90 gm. in three feedings at four-hour intervals, each feeding preceded by 15 units of iletin (half the number of grams of carbohydrates), were ordered.

On the following day no untoward symptoms had developed and protein  $\frac{3}{4}$  gm. per kilogram of body weight was added to the diet. Glycosuria was 3 per cent, no diacetic acid and a small amount of acetone reported from the laboratory. From this time on, by the gradual addition of sufficient fat, a basal maintenance diet (25 cal. per kg. of body weight) was prescribed and six days after entering the hospital the patient was rid of her urinary sugar, acetone and diacetic acid and had a blood sugar of 124 mg. per 100 c.c.

Her diet consisted of carbohydrates 70 gm., protein 60 gm., fat 110 gms., in three meals, each meal preceded by 14 units of iletin, furnishing approximately 1500 calories and with a fatty acid to glucose ratio of 1.1 to 1, well within the limits of safety. The day preceding the operation the amount of fat was reduced one-half, decreasing thereby the amount of ketone bodies to be oxidized following the operative work. The patient was advised to drink water every hour and in addition normal saline up to one quart was administered by proctoclysis.

Her convalescence was uneventful. On the third postoperative day 90 gm. of carbohydrate as orange juice was given in three feedings, each feeding preceded by fifteen units of iletin, and by the end of the seventh day the patient had returned to her basal maintenance diet and had a normal urine.

With the knowledge we possess today of the food requirements of a diabetic and the inestimable aid we possess in iletin, these individuals can no longer be classed among the dangerous surgical risks. On the other hand, by our failure to recognize the difference between a diabetic with surgical pathology not requiring emergency measures and an acute surgical abdomen in a diabetic, a high mortality rate will be maintained. In the former we may choose the time of operation and properly prepare the patient with sufficient food and the required amount of iletin for its assimilation. In the latter the treatment of the diabetes must not delay surgical intervention for the relief of pathology that is in itself threatening the life of the patient.

## ACTINOMYCOSIS OF THE KIDNEY. CASE REPORT\*

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Before reporting this case in detail a brief description of this comparatively rare and interesting disease will freshen our knowledge of the etiology, the mode of transmission and the special pathology.

Actinomycosis effects man and animals, especially cattle, where it is known as "lumpy jaw." In cattle it was thought to be a form of sarcoma of the jaw, until Bollinger, in 1877, demonstrated that the infection was a vegetable parasite, and Harz named it *actinomyces bovis* on account of the radiating structure of its colonies in the tissues. A little later J. Isreal described cases in the human which are known as actinomycosis. Ponfik first demonstrated the human and bovine disease.

### ETIOLOGY

The specific lesion appears in small, yellowish, irregular granules, varying in diameter from a fraction of a millimeter to one or two millimeters. The larger granules are made of collections of smaller ones. They may be soft and friable or hard and calcareous. The characteristic formation of the granule is a branching microscopic organism and the degenerated products of it. In a microscopic field the granules appear hyaline, club-shaped, of varying size and thickness, arranged in a radiate manner. A number of phases of the growth will be noted. There will apparently be layers of branching, interlacing filaments with a central portion occupied by necrotic filaments and pus cells. The club-shaped bodies expand out of the distal filaments, where the growth is most luxurious. In other lesions the filaments will apparently disappear and necrotic material will be found peppered with irregular, club-shaped bodies. The "clubs" and "rays" are better developed in the bovine lesions than in man. Considerable connective tissue is thrown out about these nests of "rays," showing a resistance on the part of the tissue to the spread of the disease and it may be comparatively slow. Other tissues have little resistance towards it.

Efforts to make cultures from these actinomycotic abscesses have met with rather poor success. This fungus is distributed on grains and vegetable matter and is carried into the tissues by penetrating foreign bodies, such as carrying uncooked grains or vege-

tables into the mouth, or it may gain entrance into the tissues through wounds made by penetrating foreign bodies. Pulmonary actinomycosis is produced by breathing the dust of dried grains. That the disease is in and about the jaw is indicated by carious teeth. Its contagiousness has never been proven or demonstrated. Many experimenters have endeavored to inoculate animals with material from actinomycotic lesions but without success.

### PATHOLOGY

The effects of this fungus growth in the tissue are suppuration and destruction with a formation of granulations and connective tissues. This invasion of the surrounding tissue outside of the colony of actinomycosis may be considerable. Almost any organ of the body may be the location of the lesions, for it travels by metastasis through the blood vessels as well as by direct extension. This metastasis may be quite extensive, producing considerable connective tissue and pus cavities or large abscesses. These may again spread by continuity with the formation of small abscesses, suppurative tracts and sinuses, opening either on the skin or in mucous membranes. After draining out the older portion the lesion may heal over by cicatrization, in an effort made on the part of the body to throw off and heal over the abscess cavity. This tendency of these necrotic centers to rupture other cavities and blood vessels tends to wide dissemination throughout the body. Lesions have been found in the brain, the heart and the extremities, according to the distribution of the spores.

Four types of distribution are commonly described: (1) Head and neck, (2) thoracic, (3) abdominal, (4) cutaneous.

*Head and Neck:* This group comprises fifty per cent of all the cases of actinomycosis reported in man. It includes the buccal and pharyngeal cavities, the face and neck, the bones of the jaw and skull and the brain. It is only natural this group should be the largest as it is the portal of entry for this infection. The coarse lesions are characterized as brawnish infiltrations, or sarcoma-like in appearance and not uncommonly present sinuses and points of suppuration.

*Thoracic:* About fifteen per cent of the reported cases are of this type and the lungs are the chief seat of the lesions, consisting of abscesses and cavities with dense connective tissue formation which may resemble tubercle bacilli and acts very much

\* Read before the Staff of Children's Orthopedic Hospital, Seattle, Wash., Dec. 23, 1924.

like it, in breaking into small bronchi and being disseminated.

*Abdominal:* This embraces about twenty per cent of all cases. It is produced by the extension of the infection, by metastasis, or infection of the gastrointestinal canal. It is possible to have a primary infection of the intestine which is concealed and cannot be demonstrated. The commonest location in the intestines is the cecum and appendix, from which point it spreads. The characteristic abscesses and sinuses form and extend very far, involving the muscle and connective tissue. Any organ of the abdominal cavity may be involved: the spleen, the liver, the pancreas, the stomach, the bladder or the kidneys.

*Cutaneous:* This is rather rare and the report of cases are few and usually result from secondary invasion from deeper tissue.

These original lesions have been mentioned to show the extent of the disease at times, and how difficult it is to diagnosis until there is some localized pathology. If it is a suppurative sinus, the yellowish hyaline granules are more or less characteristic and the brownish red appearance of the skin is more or less peculiar to this disease. It is probably confused with tuberculosis more than with any other disease. Sometimes there is a clear history of exposure to bovine actinomycosis, which helps in the diagnosis.

#### PROGNOSIS

The prognosis of the disease depends upon its extent and the organs involved. It is usually a slow invasion and one never knows its exact extent. A local lesion may be curretted or cleaned up and healed over, and at some later date it may appear elsewhere. The involvement of the lungs, liver, peritoneum and the intestines is serious.

#### TREATMENT

This is largely surgical and the giving of large doses of iodide potassium over long periods of time. Some have used the x-ray with reported good results.

#### CASE REPORT

The patient is a boy eight years of age, American, white, an only child. The father and mother are thirty-six and thirty-one years old respectively; neither are robust but are rather underdeveloped. The boy was never strong or robust but was always undernourished and underweight. Two years ago an appendectomy was performed for a suppurative appendix; it was drained. This healed up in the course of a couple of months but during his convalescence he contracted measles.

The father stated that for the past year they had been living on the outskirts of Seattle, but previously they had lived in Harrington, which is a wheat farming country. Five years ago, the boy not being very strong, the father purchased an eight-year-old pure bred Jersey cow, which had the best of papers and certificates. The cow was purchased especially for the son, with the idea of fattening him with the milk. This cow developed an abscess of the left jaw. They had been using the cow's milk for six months past. The abscess was lanced and drained for some time and the cow went dry. Shortly after this abscess was lanced and drained the cow gave birth to a calf, but she had no milk. The cow gradually got poorer, and died four months afterwards.

*Present Illness:* The patient has been in bed since last spring, with a temperature running from 100° to 102°, and gradually getting weaker. An abscess formed in the right loin posteriorly, which was opened and drainage instituted. This sinus has



Fig. 1. Bismuth injection of actinomycosis sinus, showing connection with the kidney, duodenum and cecum.

been draining constantly ever since. His appetite is very poor, he eats but little, and is progressively getting weaker. There are no sweats or chills, no nausea or vomiting. The bowels have been regular for the past month. The urine is turbid and yellowish; the patient complains of frequency. There has been no hematuria. He was admitted to the Children's Orthopedic Hospital September 13, 1924.

*Examination:* His height is four feet one inch. At the present time he weighs forty-five pounds, his pulse is rapid, temperature 100°, respiration twenty. Nutrition, underdeveloped. The boy looks five years old. He is bright and intelligent, his face is peaked, his skin is dry with no eruptions, the reflexes are normal, lymphatics are not enlarged, teeth good, tonsils small, heart enlarged, rapid, no murmurs. His blood Wassermann is negative, tongue clear, muscles wasted. The abdominal walls are thin, no tumors felt and no tenderness over either kidney. There is a large scar, healed by granulation over the appendix; it is slightly separated. There is a dressing on the back over the right lumbar region which shows a sinus and a yellowish discharge. The external

genitals are negative. Blood examination: Hemoglobin 40 per cent; erythrocytes 4,400,000; polynuclears 85 per cent. A bismuth injection of the sinus was made which shows a very irregular, spider-like cavity. There was no evidence of renal calculus. This sinus is seen in figure 1.

Under ether anesthesia a meatotomy was performed. The child was then cystoscoped and the ureters were catheterized. The bladder capacity is 90 c.c. The urine is pale amber, very cloudy, forty per cent acidity, specific gravity 1.016, faint trace of albumin, no sugar, few squamous and cuboidal epithelial cells, no casts, numerous pus cells, occasional gram positive bacilli, no tubercle bacilli. The culture shows a scant growth of short, plump, gram positive bacilli, bearing spores. The mucosa was injected and it was found to be spotted with flakes and balls of mucopus. There were no ulcers, the walls were regular. No diverticulum was found, no calculus. The trigone was raised and edematous; the left ureteral orifice was rather large and slit-like in appearance. It was easily catheterized with a No. 5 catheter. The right ureteral orifice was sclerosed, flat and impossible to catheterize. No efflux of urine could be seen. A provisional diagnosis was made of tuberculosis of the right kidney. He was given quartz light treatment for quite a while.

September 26 he was given 275 c.c. of blood by direct transfusion. This seemed to help the patient but little. On October 2 his hemoglobin was 38 per cent, erythrocytes 3,804,000. Phthalein test was: first hour ten per cent, second hour twenty-five per cent. He continued to run a high temperature and to eat less. A culture for tubercle bacilli was negative. The urine still showed many pus cells. It was decided that he would not get any better, was steadily losing ground, and that his only chance for recovery was a nephrectomy, which was performed the tenth of October. An anesthetic of anesthesol and ether was employed.

**Operation, Right Nephrectomy:** An oblique incision was made over the right lumbar area. The skin and superficial muscles were cut through and the thickened peritoneum was exposed. There was a great mass of necrotic tissue and sinuses in several directions. A skin sinus the size of a No. 28 French sound was cut out. The kidney was located and a subcapsular dissection was made. After freeing the kidney all around, gallbladder clamps were slipped on the artery, vein and ureter. The ureter was small and atrophic. The kidney was cut off and No. 2 chromic gut and a rounded needle were used to tie the renal artery and vein. There was no bleeding from the stump. A rubber drainage tube was placed through the old sinus into the renal fossa. The fascia was sutured with interrupted chromic gut. The skin was sutured with silk-worm gut. The operation was performed in twenty minutes. The patient finished the operation with a good pulse.

**Pathologic Findings:** The kidney measured five by six centimeters; it was lobulated and almost as broad as it was long. The outer surface showed multiple tuberculous abscesses, areas of caseation and broken down tissue. The pelvis was small and almost obliterated. In the lower pole there was a well defined abscess, lined with yellowish mucopurulent membrane. There was a vast amount of perirenal inflammation. The perirenal fat, capsule, and muscles of the back were glued and welded into one mass. A clinical diagnosis was made of tuberculous nephritis, right.

The Pathologic Report was as follows:

"September 10, 1924.

"Specimen shows a mass of tissue five by eight by three centimeters. Cross section reveals a large amount of necrotic material everywhere. Some areas

are yellow, others are green, there is very little kidney tissue remaining.

"The microscopic section shows a piece of kidney tissue which is everywhere infiltrated with masses of round cells and pus cells, and some areas of definite abscess formation. Some of the glomeruli appear quite normal, others are markedly infiltrated with infectious material.

"There is a marked endarteritis. There are several bodies found that are very suggestive of actinomycosis.

"Diagnosis: Acute diffuse suppurative nephritis.

"(Signed) R. E. MOSIMAN."

**Postoperative Course:** The temperature remained about the same. The pulse ranged from 120 to 130. He rallied nicely from the operation and his general condition was satisfactory. The dressings were changed every three hours as there was considerable pus. On the third day the tube was removed and the temperature came down to normal, although the pulse was still rapid. It was noticed that fifteen minutes after taking milk or food particles of the same came through the wound. On the seventh postoperative day the patient was given five per cent glucose solution subcutaneously; the temperature ran subnormally and he refused to eat. A great deal of undigested food came through the wound. An enema was given which also showed in the wound. On the twelfth postoperative day the patient died. He became progressively weaker, refusing food, and the pulse became imperceptible. An autopsy was held the same day.

The following autopsy report was made by Dr. R. E. Mosiman:

"Body of an eight year old boy, very emaciated. Large wound over the right kidney, the edges of which are moderately inflamed and pass undigested food. On opening the abdomen a large amount of pus came from an abscess in the left lobe of the liver. On careful dissection an opening was found from the duodenum into the wall of the cavity. These communicated with the bowel and the duodenal contents to the wound. There is a marked thickening of the diaphragm tissue over the right lobe of the liver, which also contains a large abscess made up of seminecrotic bluish stained material. There are several abscessed cavities, beside the stomach and the anular surface of the spine. There is no involvement of the spinal vertebrae at this point. Heart and lungs negative. The left kidney is large and shows normal striated papilla and pelvis but there is a small abscess at the lower pole of the cortex. The pancreas and intestines seem normal.

**Microscopic autopsy:** Section 1. Shows liver tissue markedly infiltrated with masses of round cells, plasma cells and pus cells. The center contains numerous small abscesses and from one to several ray fungi. There are areas of fibrous tissue, hemorrhage and compressed liver cells throughout the section, probably secondary to scar tissue formation.

Section 2. Shows a piece of tissue taken from the diaphragm. It shows a thickness of the pleura and the diaphragm, all of which is infiltrated with round cells and an occasional pus cell.

Section 3. Shows a small abscess of the left kid-

ney. This shows an inflammatory reaction of the abscess wall, the center of which contains necrotic material. It is surrounded by granulation tissue extending into the kidney. There is no ray fungi in this section.

Section 4. Shows the pancreas, but no pathology found.

Diagnosis: Actinomycosis.

(Signed) DR. ROSCOE E. MOSIMAN.

In summing up the interesting points of this case one notes its rarity, the difficulty of diagnosing it, the absence of all abdominal symptoms, its close resemblance to tuberculosis, and the tracing out of the source of infection.

## KIDNEY INFECTIONS\*

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AND

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Kidney infections occur so frequently that they are among the most common diseases with which the general practitioner and urologist have to deal. Much controversy has waged over the route of the infection. At the present time many authorities maintain that bacterial infections of the kidney are blood-borne, and lay emphasis on foci of infection in the teeth, tonsils and colon as the source of the trouble. Autopsy findings and experimental evidence bear out these conclusions in many cases.

In practice, every physician has encountered cases of pyuria which are obstinate to treatment and which persistently recur. The urologist is unable to discover any accountable lesion in the genitourinary tract; pelvic lavage gives only temporary relief, if any. In view of the fact that the kidney excretes bacteria, as demonstrated by Biedl and Kraus<sup>1</sup> and Von Klecki<sup>2</sup>, we surely have every reason to believe that this type of pyelonephritis is the result of constantly recurring infection from some focus.

### HEMATOGENOUS INFECTIONS

Experimentally it is possible fairly constantly to produce infections of the kidneys by intravenous injections of broth cultures and suspensions of bacteria grown from infected teeth and tonsils. The lodging of the organisms in the capillaries of the kidneys produces septic infarcts. These may develop into extensive abscesses, if the animal lives long enough; may endure as a chronic pyelonephritis; or may undergo resolution with scar formation, dependent upon the type and virulence of the

organism and the resistance of the host. The post-mortem examination on such an animal reveals involvement of other organs also, although some workers have reported isolation of strains of bacteria which are specific for pyelonephritis.

Clinically we see all grades of renal involvement, from the acute suppurative unilateral and bilateral nephritis, toxic and rapidly fatal, down to the low grade, so-called atrophic, pyelonephritis, whereby the kidney is slowly reduced to an irregular distorted mass composed largely of scar tissue. The acute toxic glomerulonephritic, arteriosclerotic and sclerosed kidney, which is the result of diffuse bilateral renal injury from the toxins of acute infectious disease, chemical poisons, or vascular change is not referred to in this discussion, but only those cases where the active process is primary in the kidney. We see tuberculosis of the kidney, wherein the entire kidney parenchyma may be resolved into a caseous mass, without microscopic evidence in the urine of the nature of the disease, or without marked physical symptoms being present. All these types of infection, occurring as they do, often with very little evidence in the urine as to the nature or the extent of the process, are unquestionably hematogenous. Foci of infection are many times demonstrable.

### ASCENDING INFECTIONS

On the other hand, we have definite clinical proofs of ascending renal infection. It is impossible to explain the septic reaction which follows the blockage of a retention catheter and the positive blood cultures found at that time on any other logical basis. Much debate has taken place concerning the manner by which these infections reach the kidney pelvis. The idea that these organisms reach the kidney by means of the lymphatics is hardly tenable. The lymphatics of the ureter are segmentally arranged and offer no direct route to the kidney pelvis. Neither have experiments borne out this theory. It is also highly improbable that bacteria advance against a descending stream of urine.

Recent experimental work by Graves and Daviddoff<sup>3</sup>, of Boston, appear to demonstrate clearly the mechanism by which these ascending infections take place. They found that by introducing fluids into an experimental animal's bladder, while it was in an active tonic state, strong contractures of the bladder musculature were set up, which reflexly stimulated ureteral peristalsis. As the experiment proceeded, the contractures of the ureter were at first more

\* Read before Kootenai County Medical Society, Coeur d'Alene, Ida., Aug. 25, 1924.

powerful, in an endeavor to repel the vesical reflux; then became more rapid and weak and finally ceased, whereupon vesical regurgitation occurred into the kidney pelvis.

They found that the important factors in producing vesical regurgitation were an active tonic bladder and ureter. The amount of bladder distension and intravesical pressure were variable factors. The introduction of fluid into a partly filled quiescent or atonic bladder was not productive of vesical regurgitation. The pressure on the intramural portion of the quiescent ureter apparently causes a valve action. There may be an analogy to this latter phenomenon in the atonic tabetic bladders which become greatly distended, yet these patients go for a long time free of renal infection and impairment. This work gives us every reason to believe that, given an active or irritable bladder and obstruction or spasm at the vesical outlet, or even the tenesmus and straining which occur in the presence of cystitis or trigonitis, vesical and ureteral regurgitation very probably takes place.

Once the bacteria have gained the renal pelvis the sequence of events depends upon the type of organism, its virulence and the individual resistance of the host. Infection of the pelvis develops, yet it is doubtful if pyelitis exists as an entity for over a brief period of time, or that symptoms which ensue are the result of absorption from the kidney pelvis, for we know that the introduction of such substances as indigo-carmin, phenolsulphonphthalein and india ink into one pelvis will result in their presence in the opposite kidney. Magoun<sup>4</sup>, working with cultures of *B. prodigiosus*, introduced them into one pelvis under the secretory pressure of the kidney. He was able to recover positive cultures from the blood stream and the kidney cortex. It would seem, therefore, that in pyelitis or pyelonephritis of ascending origin we are no doubt faced with a kidney acting as a focus of infection and the site of a disease process which in itself may be destructive to life.

The question as to whether or not a kidney infection is the result of a blood-borne bacterium, or whether it has originated in the lower urinary tract is of great importance to the internist and urologist alike. The internist is concerned with the general search for the foci of infection, to which the renal involvement may be secondary. If the kidney is the primary point of entry, the teeth, tonsils and adenoids are likely to suffer for naught, to the disappointment of physician and patient alike,

as regards relief of symptoms. Given a case of renal infection, the urologist is interested in a careful study of the urine and genitourinary tract which may reveal the etiology of the disease. Any possible obstructions in the urethra, vesical neck or ureters should receive careful attention. Obstructions and inadequate drainage invite infection. Any impediment to the urine along the urinary tract may be responsible for ascending infection of the kidney.

Among the most common obstructions with which the urologist has to deal are urethral stricture, obstruction at the vesical outlet due to prostatic hypertrophy, carcinoma, fibrous contracture, tumors, and congenital anomalies. There may be stricture, ureteral calculi, kinks and abnormalities of the ureters, or pressure on them from without, as in pregnancy and neoplasms.

Careful search should be made for a nidus of infection, and the type of organism. The following bacteria are among the most common with which we have to deal in kidney infections: *B. coli*, staphylococcus albus and aureus, streptococcus, tubercle bacilli and more rarely lact. aerogenes, pyocyanus and gonococcus.

Depending upon whether the infection reaches the kidney through the blood stream or by ureteral reflux, the process varies in degree from a mild pyelonephritis, with few or no symptoms, to more advanced conditions, where much kidney destruction may take place. It may be difficult at times to determine whether an infection is hematogenous or an ascending one. The presence of infection elsewhere suggests an hematogenous origin.

#### SYMPTOMS

Acute bilateral and unilateral suppurative disease of the kidney is fortunately comparatively rare. The bilateral is usually part of a general septicemic and pyemic process. They are conditions rarely seen by the urologist. Acute unilateral suppurative disease of the kidney is progressively toxic, and fatal unless cared for promptly. The symptoms are acute in onset, characterized by chills, fever, high leucocytosis, profound toxemia, abdominal tenderness, lumbar spasm on the affected side and acute tenderness over the kidney. The condition simulates perforated ulcer, acute cholecystitis or appendicitis if on the right side. The urine is slightly murky, contains albumin, and a few pus cells. The treatment is nephrectomy. The pyogenic cocci are the

usual infecting agents. Other bacteria produce a less virulent, nonsuppurative inflammation as a rule.

Where the individual resistance is high and the organism of low virulence, the so-called atrophic pyelonephritis may develop. Clinically the patient usually complains of a dull ache in the affected kidney region, intermittent and acute attacks of pain, frequency of urination and dysuria. The disease is unilateral. It results eventually in almost complete fibrosis of the kidney. The urinary findings are a few pus cells and bacteria to the field. Where examination reveals the renal function low and decreasing, the kidney should be removed.

#### PATHOLOGY

The pathology in acute suppurative nephritis reveals a congested kidney. Scattered throughout its substance are small suppurative foci. There may be areas where these abscesses have coalesced. The resulting large abscess is likely to have perforated the capsule, and a perinephritic abscess resulted.

We may class pyonephrosis as a form of pyelonephritis, wherein the infection is developing in the presence of a marked obstruction. Dilatation and pressure atrophy are superimposed upon infection. Tuberculosis of the chronic cicatricial type should not be confused with atrophic pyelonephritis. Clinically the findings are indistinguishable, but the cystoscopic and microscopic pictures usually reveal the nature of the disease.

The kidneys of atrophic pyelonephritis resemble the sclerotic kidney of arteriosclerosis. The outer surface is not so scarred and irregular as the arteriosclerotic, and the capsule is thick and strips easily. The diseased process is usually confined to one portion of the kidney and the remaining tissue hypertrophied.

Concerning tuberculosis much has been said and written. Suffice to state here that it is unquestionably a blood-borne disease. Widely different grades of infection are noted, from the open suppurative acute type, with involvement of the entire genitourinary tract, down to the chronic cicatricial closed type, with few or no symptoms.

The pathology of the ascending infections has not been so accurately worked out. They are usually bilateral. The infection extends from the renal pelvis, producing a diffuse inflammatory reaction. The uncomplicated acute cases rarely cause suppuration and resolve spontaneously. The clinical symptoms of pain, chills, fever, sweats, pyuria, bacteriuria and leucocytosis are present in varying degrees,

dependent upon the virulence of the infection and its extent. The pyogenic cocci are occasionally encountered, especially in the acute attacks. They are to be dreaded because of their greater virulence and power to produce suppurative processes. By far the most common organism met with by the urologist in these pyelonephritis cases is the *B. coli*. This infection tends to be chronic, responding in a greater or lesser degree to treatment.

Pathologically there is a diffuse inflammatory process with general retraction of the uriniferous tubules, resolution and scar tissue formation, causing a dilatation of the calyces (the so-called inflammatory clubbing, as seen in the pyelogram). Clinically there is general malaise, septic temperature, night sweats, loss of appetite, passage of purulent and bacterial urine, leucocytosis, slight tenderness over the kidneys, variable with the infection.

#### KIDNEY INFECTIONS IN CERTAIN CONDITIONS

Pyelonephritis should be looked for in unexplained temperatures and other symptoms in childhood, pregnancy and puerperium, and in prostatic hypertrophy. With children girls are affected more frequently than boys. This has been explained by the anatomic difference of the shorter urethra in girls, through which bacteria may gain entrance to the bladder more readily than in the case of the longer male urethra.

Pyelonephritis in children may be acute or chronic. The acute conditions most often are associated with the infectious diseases, as scarlet fever, measles, tonsillitis and diphtheria. The onset may be acute, with headache, chills, nausea, vomiting and abdominal tenderness. It may resemble an acute surgical condition. Much needless surgery undoubtedly has been done for pyelonephritis in children. Some cases may run a sustained temperature which simulates typhoid fever. The greater number of the pyelonephritides following infectious disease usually resolve spontaneously. A few persist as a chronic pyelonephritis with occasional exacerbations. It is these types of patients in which foci of infection should be carefully sought for. Where pyelonephritis develops in a child from no demonstrable cause, it is well to bear in mind that uric acid calculi are fairly common in children. Small uric acid calculi in the calyces and pelvis of the kidney may be the site of irritation and favor infection. As is well known, these calculi are difficult to demonstrate with x-ray because of their permeability.

Pyelonephritis of pregnancy and the puerperium may result from inadequate drainage of the kidneys, which is more likely to be present during this time. The increased intraabdominal pressure, weight of the pregnant uterus, and often unavoidable trauma of childbirth, all tend to obstruct the ureters and interfere with their normal peristalsis. The symptoms usually develop about the fourth to fifth months of gestation. Trauma to the pelvic portion of the ureters during childbirth may cause edema and interruption of peristalsis. This obstruction permits infection which is often responsible for unexpected temperatures following delivery. The symptoms may easily be mistaken for puerperal infection.

Proper treatment will bring the large majority of pregnant patients, who have pyelonephritis, through to term. The obstetrician should be slow in inducing labor until after all medical treatment has had a thorough trial. Ureteral dilatation and drainage of the renal pelvis by indwelling ureteral catheter for two or three days proves highly beneficial for many obstetric patients and practically always merits a trial.

Patients who have prostatic hypertrophy with urinary obstruction almost invariably develop pyelonephritis. The back pressure and infection gradually lower the functional capacity of the kidneys. Kidneys so impaired improve in function most remarkably under drainage and forced fluids, and the infection responds readily as a rule. The forcing of fluids increases the rate of elimination of retained urinary constituents from the blood. An impaired kidney will excrete with greater ease, at a lowered concentration of urinary constituents. Our preliminary treatment for prostatectomy is based upon this fact.

#### TREATMENT

Treatment must depend upon the individual case. As a rule acute pyelonephritis will resolve spontaneously under rest, bland diet and forced fluids. The chronic cases demand a careful study for all possible foci of infection. A thorough examination of the genitourinary tract should be made for obstruction within or without the tract, the presence of calculi ruled out, and the type of organism determined. The surgical principle of adequate drainage holds true in the treatment of these cases. Often the dilatation from ureteral catheterization produces cures.

By mouth the favorite remedy has long been hexamethylenetetramine. This drug breaks up in an

acid medium, into ammonia and formaldehyde. As it is ordinarily dispensed, this action largely takes place in the acid stomach, so no adequate concentration of formaldehyde is secured in the kidney to be of any antiseptic value. The logical way to give hexamethylenetetramine would seem to be in doses up to the patient's tolerance, in enteric capsules, to be followed about an hour later by some such substance as sodium acid phosphate. The splitting of the drug would largely occur in the acid urine after this manner of administration, and a maximum concentration of formaldehyde be secured at the kidney level. A highly effective line of treatment is to change alternately the reaction of the urine, every ten days, from acid to alkali. Sodium bicarbonate, sodium citrate and potassium acetate have been used successfully in the alkaline treatment.

The diet should be bland and bulky. Fluids should be forced up to three to four liters per day.

Locally the pelvis may be lavaged with benefit in many cases. Ureteral strictures should be dilated, and the bladder infection cared for. Irrigation through two ureteral catheters may prove beneficial. Various remedies have their adherents. Vaccines have proven uniformly disappointing. Intravenous use of mercurochrome-220 for *B. coli*, and salvarsan for the cocci, has been favorably reported. Whatever the line of treatment followed, in dealing with kidney infections, we should bear in mind the different sources from which these infecting agents may come, and investigate the local conditions under which they are enabled to persist.

#### CONCLUSIONS

Infections of the kidneys are of hematogenous and ascending origin.

The ascending infections are most probably acquired through ureteral reflux from the bladder.

All patients with pyelonephritis require a thorough urologic study in order that treatment can be intelligently directed.

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## A REPORT OF A CASE OF KOEHLER'S DISEASE AND DISCUSSION\*

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In June, 1924, a boy aged five years was brought to me by his father who is a physician, with the following history: One year previously he had complained of pain in his right foot, which was relieved by altering his shoes. Several days before seeing me he had developed a limp, which had come on when he discarded his heavy winter shoes for light soled athletic shoes. There was a pain and swelling in the foot.

When I examined him there was a redness over the tarsal navicular and some pain upon pressure. The tuberculin test was negative as was also the Wassermann. There was no history of rickets or infection. A skiagram was made which showed the condition to be Koehler's disease. A skiagram was also made of the hips and patellae, which were found to be normal.

both feet may be affected. The child develops a limp and walks on the lateral part of the foot. Spontaneous recovery always occurs as far as the present records show in six to twelve months from the date of the diagnosis.

The ultimate diagnosis rests with the appearance of the x-ray picture and there seems to be general agreement in the findings. They are as follows: The affected bone is smaller than normal, one-half to one-quarter size. The density of the bone is increased two or three times. The normal architecture of the bone has disappeared. The outline is irregular and the bone is shorter from before backward but not widened from side to side.<sup>3</sup>

There is no general agreement regarding the etiology. Many explanations have been suggested:



Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 1. Normal foot.

Fig. 2. Radiogram taken at onset of acute stage.

Fig. 3. Taken three months later. Fragmentation.

Fig. 4. Six months later. Almost normal again. No symptoms present.

Fifteen years ago Koehler<sup>1</sup>, of Weisbaden, described a peculiar disease, or more properly a peculiar condition, consisting of an abnormal shape, size and density of the tarsal navicular bone. He thought at that time that the condition would probably be frequently found, but in 1915 he had found only twenty-six cases reported in the literature, and Kidner<sup>2</sup>, in 1924, found one hundred and four cases at that time.

The disease occurs in young children and more frequently in boys between the ages of three and ten. The onset is usually insidious, sometimes sudden, with pain and swelling in the region of the tarsal navicular. While it is usually unilateral,

(a) infection, (b) compression fracture, (c) delay in ossification stimulated by trauma, (d) that it is analagous to Legg-Perthes disease, (e) healed and sclerosed tuberculosis, (f) dystrophy, (g) following an injury.

There is much to be said in favor of the traumatic hypothesis and that it is analagous to Legg's disease.<sup>4</sup> Of the reported cases the ratio of seven boys to three girls is found and in the bilateral cases the ratio is six boys to one girl.<sup>5</sup> No other single factor is so constant as the greater liability of young boys to injury than girls between the ages of three and eight years. Also, if it were due to a general condition, we should expect to find similar conditions in bones not subject to injury, i.e., weight bearing. This is not found except a solitary case

\* Read before Seattle Orthopedic Club, Seattle, Wash., Nov. 22, 1924.

of similar disorder found in the carpal navicular and reported by Kienbock. A very low grade of osteomyelitis could easily be associated with some of the cases, but it would not necessarily be essential.

The navicular begins to ossify at about four years of age, being the last of the tarsus to ossify.<sup>6</sup> It has a poor and a very vulnerable blood supply from the arteria dorsalis pedis.

From a study of this case and of many of the cases reported in the literature, a plausible explanation is that the cycle of changes commences with an insignificant injury directly to the bone or its blood supply. This causes a blocking or a traumatic anemia to develop. The balance between osteoblastic and osteoclastic activity is disturbed, the former predominating.<sup>7</sup> Continued weight bearing causes the proximal distal measurement to diminish, but not the medial lateral. The bone becomes for some months what might be described as a "sterile sequestrum," and corresponds in time with the acute stage of the symptoms. The bone remaining uninfected, the blood supply becomes reestablished and regeneration of the bone commences, the new vessels utilizing the old frame work in a manner similar to that shown by Robertson and Gallie<sup>8</sup> in their experiments on bone grafting. After some time the balance between osteoblastic and osteoclastic activity becomes normal and some months later a skiagram taken shows a bone which has regained a normal appearance.

Microscopic examinations of this condition naturally are rare and are inconclusive. Kidner found irregular masses of cartilage and imperfect ossification and Lucene and Mouchet<sup>9</sup> found necrotic areas surrounded by vascular and fibrous tissue.

The treatment consists of rest to the foot, followed by a support, which should be worn for from three to six months.

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## MALIGNANT PIGMENTED MOLE IN AN INFANT\*

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This child was first seen at the age of three months, at which time the following history was obtained.

Parents always well and strong, aged 28 and 23; two other children living and well. Birth history normal in all respects; nursing baby.

At the time of birth the mother noticed two small wart-like growths slightly larger than the head of a black pin in the hair of the left frontal region. She asked her doctor about them and he considered them of no significance, telling her that they would disappear. Apparently there was nothing unusual about their appearance at that time. They grew rapidly, however, and coalesced so that at the age of two months there was a single mass about one and one-half inches long by one inch high and the scalp was so tightly stretched over it that blebs appeared from time to time. At this time the babe was seen by another doctor who told the parents that it was probably a sarcoma but that he found no secondaries anywhere and would advise them to have it removed when the child was about six months old. This is the statement made by the parents and may or may not be what the doctor actually said.

About a week later a swelling appeared on\* the left side of the neck just below the ear which increased in size rapidly and in the past few days had become tender. The mass on the head had at times become dark in places as if from old blood. The babe, however, had been gaining weight and apparently had not been in any discomfort until the past few days, when the neck had become tender and there had seemed to be pain when she would turn her head too far to the right.

Physical examination shows a fairly well developed and nourished female child of rather pale color, normal in all ways except as follows: On the head there is a mass in the left upper frontal region about two inches in length, by one and one-fourth inches in width, by one inch high, irregularly nodular and covered with tightly stretched scalp which is adherent to it over most of the surface. At the posterior end it is very dark, suggesting ecchymosis, but there is no fluctuation, the entire mass feeling solid and lobulated. It is not adherent to the skull nor to the scalp about the base. The cervical glands of the anterior chain on the left are markedly enlarged, forming a mass apparently about one and one-fourth inches in length by one inch in diameter, lying beneath the upper end of the sternomastoid muscle. The muscle seems to be infiltrated and there is moderate induration surrounding the mass. The skin is not adherent. There is slight tenderness but no fluctuation. There is no other glandular involvement and the chest and abdomen are normal.

A diagnosis of carcinoma was made and immediate removal advised as the only possible chance of recovery and that a very poor one. The next day the mass on the head was removed easily, it being well encapsulated, except where it was attached to the scalp and to the frontalis fascia, the involved portions of which structures were readily removed with the mass. Incision over the enlarged cervical gland exposed the upper end of the sternomastoid muscle which was pale, somewhat edematous and markedly infiltrated. This portion of the muscle was removed and the dissection carried around the mass as widely as possible.

\* Read before Seattle Surgical Society, Seattle, Wash., Oct., 1924.

Everywhere the fascia and alveolar tissue as far as could be seen were studded with innumerable pinpoint to pin-head sized nodules but no deeper glands of any size could be palpated. The mass was closely adherent to the carotid sheath which was infiltrated to a moderate degree. There was no capsule and on several occasions a thick, semi-solid whitish material was extruded which was apparently very cellular. It was impossible to remove all the infiltrated tissues and the wound was closed.

The day after the operation the babe was referred to Dr. H. B. Thompson who decided that x-ray treatment might be of value and several of these were given. The reaction was rather marked and on account of the swelling one stitch was removed from the neck wound and a probe inserted with the escape of some 4 to 6 c.c. of a serosanguineous fluid. This was upon the sixth postoperative day and the next day the wound was dry.

Four weeks after the operation she was seen again. She had not gained weight, her color was poor and secondaries were rapidly developing. There was a nodule the size of a pea in the scalp about one inch from the scar, several in and about the scar on the neck, one in the right abdominal wall about one-half inch in diameter, and there was a large mass in the left side of the abdomen extending from the costal margin to the iliac crest. The babe was very fretful and cried out frequently as if in pain. The parents were advised that the case was hopeless and that they should keep in touch with their local doctor for measures to relieve the pain. They wrote later that the child lived about one month longer.

The tissue removed was examined by Dr. R. E. Mosiman and his report is as follows:

"Gross specimen shows two masses of tissue each about 5x3x5 cm. The larger piece shows a markedly pigmented area. Cross section shows a markedly circular and pigmented area suggesting a very rapidly growing type of tumor. Microscopic sections show a tumor covered with a thick layer of epithelial cells. In some areas the papillae extend rather deeply into the underlying tissues. In one area underneath the tumor tissue there is a very vascular area, suggesting a hemangioma type of reaction. The tumor nuclei are about twice the size of an ordinary pus cell. These nuclei are irregular in shape and size and show irregular staining qualities. There are many mitotic figures everywhere among the tumor cells from the subcutaneous tissue to the very depths of the tumor. Though I do not find any pigmented cells among the tumor cells, from the size and shape and staining properties of the tumor cells and their tremendous number of mitotic figures, I feel that this specimen is a malignant pigmented mole.

"Diagnosis: Malignant pigmented mole."

#### PURPURA HEMORRHAGICA FOLLOWING BENZOL POISONING\*

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The patient, a woman 29 years of age, married, was admitted to the King County Hospital, Sept. 11, 1924, suffering from headache, tinnitus, vertigo, bleeding from the nose and gums, shortness of

breath, extreme weakness and purpuric spots on the body.

She gave the following history: Six weeks prior to admission she began to have headache which was intermittent in type; a few days later she noticed several purpuric spots on her body. She was then treated by Dr. Scott who administered calcium lactate and iron preparations by mouth and calcium chloride intravenously. After a few days treatment her condition improved and she was able to return to work.

She worked in a can factory, placing rubber rings on the lids that go on the ends of the cans. These rubber rings are dipped in benzol (which is used as a rubber solvent), then placed on the can lids and when dried become glued to the lids. According to her statement she worked in a poorly ventilated room where the benzol was evaporating, thus being constantly exposed to the benzol vapor. She also stated that several of the other women who had been exposed to the chemical agent had purpuric spots on them, but none so severe as she.

Physical examination revealed the following: Temperature 103°, pulse 120, blood pressure 100-70; bleeding from the right ear with petechial hemorrhages from the right tympanic membrane; petechial hemorrhages also from the nasal mucosa; large purpuric spots surrounding the right eye; eye ground examination revealed retinal hemorrhage with a small blood clot in the region of the optic nerve of the right eye; a small hemorrhagic area on the retina but no involvement of the optic fibers of the left eye; reaction to light and accommodation normal; purpuric area on the lower lip with small ulcer at mucocutaneous junction; marked bleeding from gums and mucous membrane of the lips; several purpuric spots on the neck; lungs negative; heart sounds rapid and weak but no murmur present; extremities and joints negative; neuromuscular system negative; purpuric spots scattered over the trunk.

Laboratory findings: Urine negative. Blood, hemoglobin 30 per cent; red cells 100,000; leucocytes 600; differential count, small lymphocytes 84, large 8, polys. 4, transitional 4; a few anisocytes were present, no platelets found, coagulation time 10 minutes. The blood was dark brown in color and the red cells were pale.

On admission to the hospital several intravenous injections of calcium chloride were given without any improvement. Blood transfusion was then resorted to and she was given 400 c.c. The hemorrhage stopped at once, coagulation time was shortened and the patient felt better. The blood picture on the next day showed red cells 1,000,000, leucocytes 2,400; there was a marked increase in polys; the blood was a brighter color. Four days later the patient again started to bleed, the blood picture dropped to what it was on admission and the coagulation time was delayed.

Another transfusion was done with the same result as the previous one. Four transfusions were done with temporary improvement, relapse following the first three, with no response to the fourth. About thirty hours before she died the patient developed a pharyngeal abscess which contained a large amount of pus and blood. Simultaneously she began to have pain in her right chest, hemoptysis, with vomiting of large clots of blood and symptoms of pneumonia which finally proved fatal. Postmortem examination was denied.

This case is of interest in that this type of purpura is on the increase, owing to the more extensive use of benzol in the various industries, a number having been reported during the war in connection with the manufacture of explosives, but so far as we can determine this is the first case reported in this particular industry.

\* Read before Staff of King County Hospital, Seattle, Wash., Oct. 15, 1924.

## CLOSURE OF POSTOPERATIVE ENTEROSTOMIES\*

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The case presented is of special interest from the viewpoint of pathologic findings, surgical procedure and technic. It concerns the closure of two patent enterostomy openings which had been made as emergency measures for recurring attacks of acute intestinal obstruction in a recent case of perforated appendicitis.

The history briefly detailed is as follows:

The patient is a frail young school girl nine years of age, who on September 27, 1924, or six weeks ago, was operated on in a neighboring city for perforated appendicitis.

On October 12, fifteen days after operation, patient began to vomit and had distention, indicative of intestinal obstruction. Owing to progression of symptoms, on October 14, a midline enterostomy was done, a loop of bowel brought out and drained with evident relief of patient's symptoms.

On October 26, twelve days after last operation, there was a recurrence of symptoms suggestive of intestinal obstruction and a second enterostomy, loop method, was done. This enterostomy was placed about three inches to the left of the former.

Since then she has progressed well, both enterostomy openings functioning with discharge of fecal matter through these openings. With the intention of removing the obstruction, closing the abnormal openings and restoring the continuity of the bowel, patient was brought to Seattle General Hospital.

Examination shows a well healed drainage scar in right lower abdomen from the former appendicitis operation. In the midline and along the left border of the left rectus are two openings lined with mucous membrane of the bowel below, the sites of the two previous enterostomies. From the former, there is a small amount of fecal-stained material, and from the left one the majority of the fecal matter is extruded. There have been no rectal fecal movements since her last two operations. The skin is only moderately excoriated; no definite masses could be palpated through the abdomen, and no special localized distension made out.

Patient was put under gas-oxygen-ether anesthesia quite readily, and it proceeded smoothly throughout. As a preliminary to the abdominal preparation, the two fistulous openings were sutured tightly with continuous sutures, inverting the mucous membrane. Suture lines were then covered with collodion gauze, thus making a completely sealed wound. The abdomen was prepared with benzine, alcohol and iodine. A semi-elliptical incision was made to the right of the midline fistula, and abdominal cavity entered to the right of the midenterostomy opening. Exploration showed a complete obstruction about three inches from the ileocecal junction. Here three loops of bowel were adherent to each other, and to the anterior abdominal wall in a tent-like fashion, and producing complete obstruction.

The loops were dissected from each other. The incision was continued around the left side of the midenterostomy opening, and when continued down through the abdominal wall, allowed the bowel, fistulous tract and surrounding skin to be elevated out of the abdomen, en-masse. A warm gauze pack was placed, through this opening, under the second

enterostomy opening to the left. The adherent bowel was clamped off the posterior side of the anterior abdominal wall. This loop was then pulled through the midline incision. The two enterostomy openings were seen to be about six inches apart, and to involve the greater share of the lumen of the bowel. Resection of the segment containing the enterostomy openings and an end-to-end anastomosis was deemed the better plan. This procedure was accomplished without much difficulty. The sutures closing the left enterostomy wound were withdrawn, and two drains led transversely to the site of the anastomosis. The midline incision was then closed tightly. At the close of the operation caffeine sodium benzoate and intravenous saline were given, and patient left the operating room in good condition.

Patient was placed in Fowler position, subpectoral saline given, and soda glucose drip instituted, running four hours on and four hours off. On the second day liquid alboline was given, and several saline colonic flushes; from the latter slight amount of gas but no fecal matter was obtained. On the third day there was considerable nausea, vomiting and distension. On removal of the drains there was seen a large distended loop of bowel just proximal to the anastomosis; a small aspirating needle was inserted into the distended bowel, and a large amount of gas escaped, the abdomen becoming quite flat and with immediate relief to patient. One ounce of castor oil, and one ounce of liquid alboline were injected through the needle into the bowl, and a hot boric pack applied to abdomen. Abdomen was gently massaged and frequent changes of posture made. On the following day patient had five copious bowel movements, and pulse came down from 130 to 108. Following this there was a rapid recovery. Outside of a slight pyocyanous infection of the wound, which cleared up readily with acetic acid dressings, the postoperative convalescence was entirely uneventful, and patient was discharged to her home on the eighteenth day in excellent condition.

### COMMENT

Acute intestinal obstruction is a probable complication to any surgical abdominal operation, and especially, as in this case, when associated with suppurative conditions requiring drainage. Enterostomy under such conditions is a life saving operation. Its success, of course, depends on the establishment of intestinal drainage proximal to the seat of the obstruction. It should be performed early and before the onset of toxic or symptoms of paralytic ileus appear. It usually can be done under local anesthesia and in a variety of ways. A loop of distended bowel may be pulled out of the abdomen, sutured to the side of incision, and either opened by cautery or a catheter sutured into the proximal portion of the loop. A Paul's tube may be sutured directly into the bowel in the abdomen by a purse string suture and the intestinal contents led away by a rubber tube. The more recent way is the insertion of a tube or catheter into the bowel and burying the same after the manner of Witzel by approximation of serosa to serosa over the invaginated tube. Such an enterostomy opening, when tube is removed, usually closes spontaneously and especially if a tab of omentum is sutured over it.

\*Read before the Seattle Surgical Society, Seattle, Wash., Feb. 27, 1925.

In closing enterostomy openings or fecal fistulae, there are several cardinal principles involved to assure success. These are enumerated briefly. (1) The skin, which is usually excoriated about the abdominal opening should be brought into good condition. (2) Entrance to the abdomen should be to one side of the fistula and preferably a considerable distance from it, thus approaching the abnormal tissue from the normal side. (3) Good exposure is necessary to allow of comprehensive survey of pathologic condition producing the obstruction. (4) The bowel and fistulous tract should be dissected out en masse and lifted out of the abdomen. (5) Resection of bowel should be preferred to closure of large opening, multiple openings in bowel, or where a large area of raw bowel surface is inevitable. (6) Careful preservation of the *blood supply* of the bowel along the line of anastomosis is extremely essential. (7) Patent opening in bowel assured by cutting away more tissue from the free than from the mesenteric side, the lines of resection making an angle of about forty-five degrees with the mesenteric border. (8) Reinforcing sutures necessary to produce a tight closure. (9) Drainage should be established to the site of the anastomosis to allow for oozing and prevent formation of abscess. (10) Early use of rectal tube, liquid alboline and measures to produce normal peristalsis of the bowel.

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**Clinical Studies on the Kahn Reaction for Syphilis.** This article by Harther L. Keim, Ann Arbor, Mich., and R. L. Kahn, Lansing, Mich. (Journal A. M. A., March 21, 1925), is based on the study of 1,000 spinal fluids obtained from 382 different patients entering the University of Michigan Hospital. Three hundred and sixty-five of this number had cases of syphilis representing all stages of that infection, while the remaining seventeen were patients with brain and cord lesions of a nonsyphilitic nature. The latter included patients with multiple sclerosis, paralysis agitans, epilepsy, and brain and spinal cord tumors. Each spinal fluid was examined with the Kahn test at the Michigan Department of Health Laboratories, Lansing, where this test is a routine procedure, standard antigen being employed. The technic of the spinal fluid examination is described elsewhere. Each specimen was examined also with two Wassermann tests; one at the serologic laboratory at the State Psychopathic Hospital, Ann Arbor, and the other at the state laboratories. This method of study was in accordance with the general plan described in the two previous articles of the series. Six divergent reactions between the Kahn and Wassermann tests were obtained in the examination of 222 spinal fluids from general paresis. Of especial interest is the high sensitiveness of all serologic reactions in this form of neurosyphilis. On 124 spinal fluid examinations in tabes, dorsalis, eighty-seven were positive, and nineteen negative with all methods. Eighteen examinations showed varying divergences between the Kahn and Wassermann test. Of 387 examinations in the diffuse type group, 290 showed agreement and eighty-seven divergence.

## SURGERY OF THE TONSIL\*

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In writing a paper for publication one must have in mind one of four things: (1) To present something original in subject matter, technic or instruments; (2) an improvement or modification of something previously presented; (3) a resume with conclusions drawn therefrom; or (4) an emphasis on a well known condition, adding something new, favorable or unfavorable to that which is already established. Obviously there is little new to offer in surgery of the tonsil, so I can safely assert this discourse comes under the fourth classification, with emphasis on a plea for better surgery in this particular field.

Current medical literature is replete with articles on the tonsil and its surgery. Our practitioners are familiar with its physiology, pathology and role in disease, indications for removal and various methods used, the cure of local and certain systemic diseases thereby, and it may seem that one presuming to offer anything on the subject is rehashing a wornout topic. However, I justify what I have to say in this paper by my observation of the very poor surgical work done as a rule.

I heard the late Dr. John B. Murphy remark in one of his lectures that the statement of a certain doctor, implying that the treatment of appendicitis was a closed subject in the face of a 20 per cent mortality, was to him, Dr. Murphy, like waving a red flag in a bull's face and he insisted on repeating at every opportunity his plan of treatment for this disease with the hope of lowering that mortality. So with any subject in medicine repetition must be tolerated and encouraged until results are satisfactory, and I am sure that the throat specialist is warranted in dwelling on the surgery of his special field just as long as it is the object of more surgical insults than any other part of the human anatomy.

That this last statement is true, I do not think there can be a shadow of a doubt, certainly not after a careful examination of any one hundred patients taken at random who have had tonsil operations. I do not think the percentage of perfect tonsillectomies in such a series would run over five or ten per cent and, unlike many things in the domain of medicine, the cause for such a condition is not hard to find. Three very simple reasons can be held accountable for such bad results. They are

(1) lack of surgical skill in the throat, (2) want of anatomic knowledge, and (3) commercialism.

A surgeon may be a "whiz" in the abdomen or in grafting bones, but a proverbial "bull in a china shop" in the throat, and I am safe in saying this is most often the case. I have seen some of this country's most eminent general surgeons attempt to do tonsillectomies and few with perfect results. It requires quite a different skill and temperament to use the special lights, anesthesia, aspiration, fine adjustment application of instruments, ligation of vessels and preservation of surrounding structures so essential to good work, and the otherwise clever surgeon, despite his self assurance and confidence, is out of place here. He will not attempt an iridectomy or cataract extraction but seemingly feels "t's and a's" are "duck soup," where as a matter of fact the finished specialist realizes there is little difference in the skill required for all when well done. We have long passed the stage where any operation is considered a success if the patient survives, and in this particular one, where lots of blood and two or three chunks of tissue extracted from the patient's pharynx mean good throat surgery.

The anatomy in this region must not only be well understood and respected, but the function of each structure and interrelation held in high regard. The examination of a few operated cases will disclose the fact that to many surgeons the tonsils and adenoids seem to be spread all over the naso- and oropharynx. At least their removal includes onslaught upon the palatoglossus and palatopharyngeus muscles, the uvula, soft palate, mouths of the eustachian tubes and superior constrictor of the pharynx, and seemingly in some cases any and all structure in the pharynx except the tonsils and adenoids themselves, and just because such attacks are not fatal or their after effects visible is no excuse for failure to preserve them, nor reason to believe the patient got a square deal.

Just what number of cases get poor results from commercialism alone is hard to estimate. I know an osteopath who has been doing this work for a long time and lots of it. To him it is easy money. Little does he know how much damage he is doing. I am rather inclined to believe the average doctor attempting this operation does not realize the importance of thorough and careful work because, even though the tonsils and adenoids may be completely removed, one not thoroughly skilled may do more harm than good by permanently damaging any of

the above mentioned structures and, while it looks like an easy task, any competent specialist can prove in his every day run of patients that after results are often disastrous to both patient and doctor. I have in mind now a damage suit against one of our leading clinics in the middle west because of "unwarranted removal of tonsils and laceration of throat."

I wish to cite a few representative cases from my histories of the past few months, giving only the salient features.

Case 1. Boy age eight, tonsil and adenoid operation three years ago. In six months operation was repeated by another doctor, and again in a year by a third doctor. Boy does not articulate well now and still has sore throat. Examination shows mass of lymphatic tissue almost filling right tonsillar fossa, stub or tonsil in left side and both pillars cut away with considerable scarring and drawing of soft palate to left pharyngeal wall.

Case 2. Boy, age eighteen, had tonsil and adenoid operation five years ago. Since then has been getting a little deaf in right ear. Examination shows clean tonsillar fossae and no adenoids, postnasal the lips of the right eustachian tube cut off and adhesions present occluding the mouth of tube.

Case 3. Girl, age nine, complains of earache and discharge in both ears following recent sore throat. Had tonsils and adenoid operation two years ago. Examination shows small stub in right tonsillar fossa and almost whole tonsil in left side, some adenoid tissue in nasopharynx bathed in pussy secretion. Obviously, had this case been operated on correctly, this serious complication, otitis media, would hardly have occurred.

Case 4. Lady, age thirty-eight, complains of continual stiffness in the throat since removal of tonsils under ether one year ago. Examination shows tonsils completely out, long scar through soft palate, absence of uvula and lots of scarrings and adhesions around pillars on both sides.

Case 5. Young lady, age eighteen, complains of pain in throat and stiffness in back of neck, developed since tonsil and adenoid operation three years ago. Examination shows tonsils (and pillars) well out on both sides. Deep scar and absence of mucous membrane on posterior pharyngeal wall, interfering with contraction of superior constrictor of the pharynx.

The operator here evidently felt the adenoids were a part of the cervical vertebrae and not only scraped them too viciously but cut through the superior constrictor.

I could go on showing different types of cases by the score, as could any specialist trained to see these things. The surgeon who does the work originally often does not see the after effect, so he goes along doing this "simple" operation "just as good" as any specialist, content to extract anything from a piece of mucous membrane to nearly all the structures in the throat, call it "just a tonsil and adenoid case" with a "nobody's the wiser" attitude. To remedy this condition, of course, is the object and purpose of the head specialist and the place to begin is within our own ranks.

I am going to discuss my idea of a tonsil and adenoid operation, as I have worked it out, the one in my hands giving the best results, though there is nothing original in it, being a combination of methods, used in two of the largest special clinics in America, which has taken several years to master. To me it has fewest objectionable features and most of the commendable ones. From it or any other thorough method a careful observer will glean that there is no such thing as a simple tonsil and adenoid operation; nor does a specialist adopt a method because it is intricate but because of results only, and to get these the operation method will of necessity seem difficult to the man not equipped to do it. Its design is not only to remove the offending organ, but to leave the throat as normal otherwise as before the operation. Any method not doing this is a poor one.

I shall not go into detail comparing the different operations in vogue. At the present time, suffice it to say there are two accepted ones, the dissection and the Sleuder. Both have many modifications, some of which may be better in some hands than the original. Of these two methods the latter has most possibilities for doing good work in a large series of cases, because it accomplishes a neater enucleation with less trauma, therefore less scarring. However, in justice to the dissection method there will occur one or two per cent of cases where it must be resorted to.

To attain ideal results in this work I have formulated "ten commandments" to be applied in every case for general anesthesia. Each is important and considered a part of the operation itself. They are as follows:

(1) Subjects for throat surgery should be in the hands of the head specialist who is best able to make a wise selection of cases to obtain good results in the surgery of this field.

(2) All cases must have a thorough physical examination, including blood and urine.

(3) Patients to be in hospital several hours before operation.

(4) No operation performed inside of a week after sore throat or respiratory infection, and not attempted in conjunction with other operations, even teeth extraction.

(5) Oral hygiene looked into before throat operations and, if sinus infection or pus discharge from nose, get it cleaned up first also.

(6) In case of children write out instructions for

parents as to diet, bowels, etc., so as to avoid misunderstanding.

(7) Have special anesthetist who understands technic of operation. Success often depends on him.

(8) A warm ether vaporizer and suction apparatus must be used.

(9) All bleeding must be stopped before patient leaves operating table.

(10) Patient kept in bed in prone position until conscious, and then for forty-eight hours no rasping of throat or blowing of nose. Use antiseptic gargle in twelve hours. Watch for secondary bleeding, acidosis and lung complications.

The armamentarium is as follows: One Carsten's electric pump, one Jenning's mouth gag, one angular tongue depressor, two number five catheters and clips, one Sleuder guillotine, two Tuffier forceps for pillar grasping, three sponge forceps, three Boetchers artery forceps, one Laforce adenotome, one small Barnhill's curet, one needle holder and small curved needle, one dozen small compact sponges and a silk ligature.

The Carsten's apparatus for ether vapor and suction, I must say is the most reliable I have found in a portable type. It warms and vaporizes the ether and removes secretions perfectly, which facilitates the operation and contributes to its safety by preventing lung complications. The importance of this procedure recently impressed itself by the death of a young lady who, despite careful aspiration, developed a lung abscess and died three months later from attempted artificial pneumothorax.

In the matter of artificial illumination, simplicity should be the guide. The head mirror with reflected light from a forty candle power frosted globe is ideal. It is placed to the left of the patient's head below the face level. None of the electric head lights or contrivances placed in the mouth can compare with it for safety, simplicity, reliability or effectiveness. It has all the advantages and none of the disadvantages of these more troublesome mechanisms.

The patient is anesthetized by the open mask method to the point where the pharyngeal reflex is abolished. The Jenning's mouth gag is inserted, watching the lips and tongue for pinching against teeth and also watching for loose teeth that they are not dislodged into the throat.

The two catheters are now passed through the right and left nostrils, brought out through the mouth and clamped and the anesthetic continued by vaporizing warm ether through a tube from pump

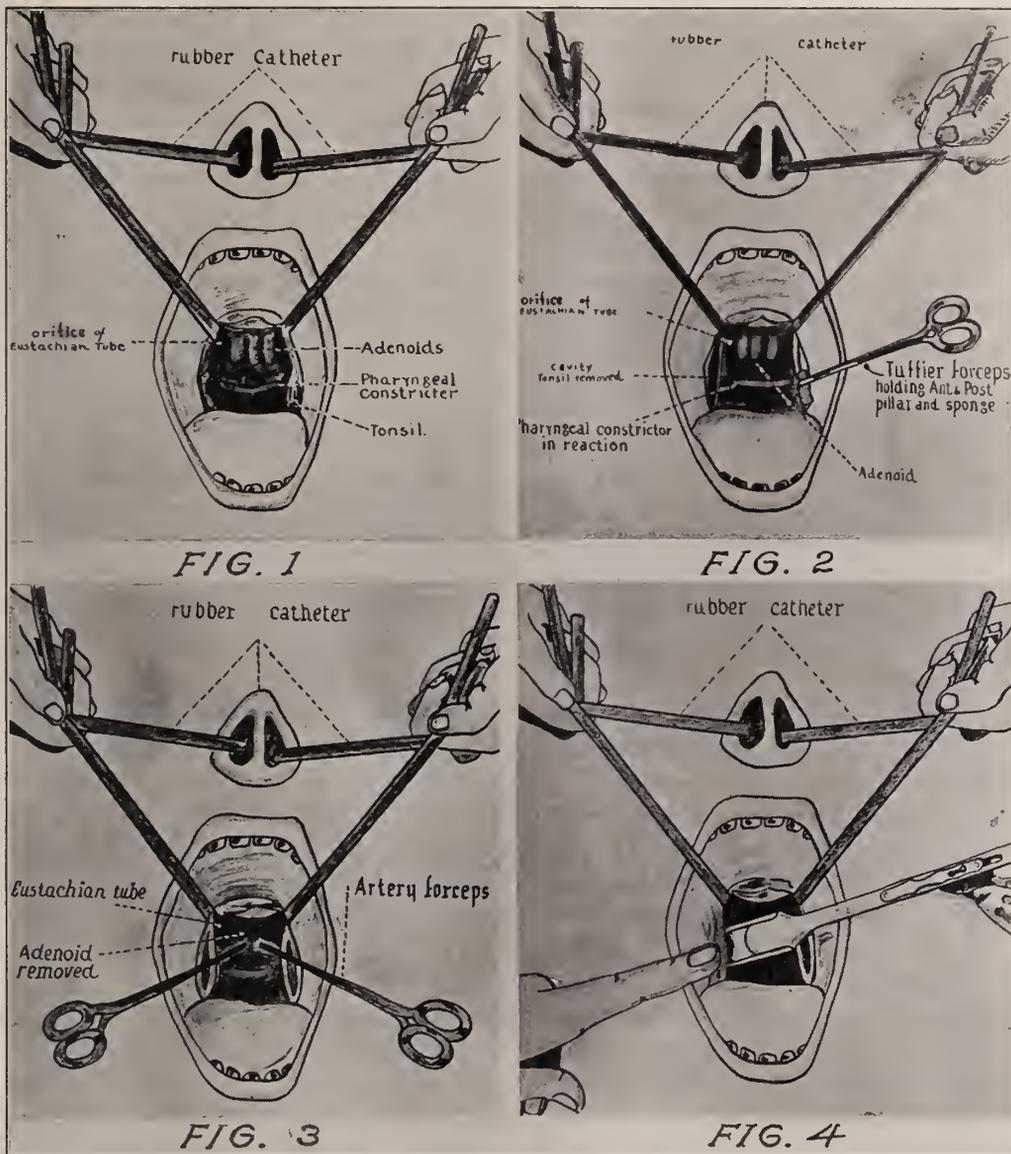


FIG. 1

FIG. 2

FIG. 3

FIG. 4

regulated so as to maintain light anesthesia. The advantages of the catheters, which are held by the anesthetist are: (1) They expose the epipharynx and give an unobstructed view of the adenoids, especially around the mouths of the eustachian tubes, so that all shreds can safely be removed without injury to the lips of the tubes and pharyngeal constrictors, (2) facilitate control of bleeding, (3) keep uvula out of operating field (figs. 1 and 2). Using the left hand the operator engages the lower pole of the left tonsil in the ring of the guillotine and elevates it, swinging the handle of the instrument around so the blade points to patient's left shoulder and the handle is over the right ear (fig. 3).

The tonsil is massaged through the ring and

enucleated, not by pushing the blade forward but by pulling the instrument and tonsil into the blade. This maneuver is necessary to avoid buttonholing the tonsil which rests over posterior alveolar eminence of the mandible. The anesthetist now retracts on the left catheter, which slows the bleeding and exposes the fossa so that the spurting points can be clamped and ligated, if necessary. There may be five such points, as there are four or five arterial branches supplying the tonsil. Rarely, however, does one have to ligate over one after clamping.

The right tonsil is handled in a similar manner, the operator using the right hand and pointing the blade to patient's right shoulder before enucleating. This position of the instrument and the act of

pulling the ring into the blade are two essentials for success in the Sleuder technic and I am sure are the cause of many failures to get results.

After all bleeding is stopped the adenoids can be plainly seen. The central mass is removed by La-Force adenotome and the shreds around the mouths of the tubes can be removed by a small Barnhill's curet, which is held much as a pen and handled gently, not grasped in the fist and scraped over the bodies viciously as is often done. When the adenoids are well removed, one will see a fossa resulting almost as clear cut as the tonsillar fossa (fig. 4). The bleeding is stopped by clamps and pressure and the patient returned to bed.

The time needed to do a thorough and safe operation after anesthesia is from ten minutes to one-half hour, depending on difficulties encountered. Speed should never be a factor in this work. One can use nitrous-oxide and enucleate the tonsils and adenoids in ten to thirty seconds. I have done this many times in dispensary practice, but it is not good surgery, disregarding hemostasis and careful work in the nasopharynx, two things very important. The bleeding should not amount to over one to three ounces of blood. The test of any surgical procedure is to place oneself in the patient's place and question if the operation is acceptable to oneself.

After an observation and study of different methods applied in many hundreds of cases in my own experience and clinics of others, including after results, I am safe in saying the method herein described is most possible of one hundred per cent results. I do not believe the present poor results will be improved as long as throat surgery is done as a side issue by any and all licensed to practice the healing art, or until it is understood by both physicians and public that a properly done operation is a task for the well trained specialist only. Certainly if the extraction of teeth has reached the dignity of a restricted field, we must admit that this much more pretentious operation should be so respected, and when this obtains, I am quite sure the long suffering public will have cause to look upon throat surgery with more confidence and less horror, and surgery will have taken another step forward.



## THE MEDICAL WITNESS AS A TEACHER OF SCIENTIFIC MEDICINE\*

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During the past several years a great deal has been written and said concerning the education of the public on medical questions. Opportunities have been sought to place before the public information on medical subjects in a scientific and rational manner. It occurs to me that we are possibly overlooking a splendid opportunity to do this by our failure to impress on the medical witness the fact that he is, and should be a teacher on every occasion that he appears in court. It is seldom that a day passes in this city when there is not being presented to the public through our courts some phase of medicine, and medical men are called in who qualify as competent to instruct a judge or a jury on the particular subject under consideration.

So far the cults have had little or no standing in such courts. Consequently this avenue of propaganda is not open to them, excepting as an attorney, occasionally in endeavoring to belittle a certain case, asks a medical man whether or not the condition which is present might not be cleared up rapidly by treatments from certain cults, and I am sorry to say that I have, on more than one occasion, heard a doctor answer such questions in the affirmative. I do not believe that such was the thought in his mind, but the answer was given largely because the question was asked by the attorney representing the side for which he was appearing.

It is true that our medical schools pay little attention to the subject of the medical witness. We seldom see articles published on this unless to decry the fact that medical men appear to differ so frequently in a court of law. This difference occurs much more frequently in a court than it does when a similar subject is under discussion in a medical society or at a consultation. I am inclined to feel that this difference is more apparent than real and created by the attorney from the wording of his question, hoping thereby to lead the jury to think there was a great difference in the minds of the medical man as to the condition existing.

It is no wonder that frequently the public feels our findings on medical subjects are hopelessly divided, after listening to such testimony. The physician seldom takes the pains to explain the reason for this apparent division of opinion, simply

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satisfying himself with having answered the question as put to him in place of taking an opportunity to fully perform his duty of educating the jury on the subject which is before them, and which he knows they must later pass judgment on, that judgment being based upon the information which has been furnished to them by the several witnesses who have appeared in the case.

Unfortunately many of our medical witnesses do not like court work. They openly and frankly admit that they do not; they do not like the many technicalities and restrictions which are thrown about them when giving testimony. They want to be free to present their case in their own manner, as they are permitted to do in their offices or at the bed side. They are not tolerant of the rules and regulations which must be followed by the attorneys in conducting such cases. This probably is one reason why they fail to take the pains which is necessary to go into the case fully and describe in detail the thing which should be made clear so that the jury may understand what is being discussed, the basis of it and the circumstances leading up to the condition which is before them for consideration.

This brings to our mind the fact that it is not sufficient for the medical witness simply to have a good working knowledge of the subject upon which he appears as a witness. It is very true that this is the only manner in which he is asked to qualify before the court as a competent person to testify on a medical subject, but sooner or later, from practical experience in the court, he will learn that to be successful in his court work he must understand his surroundings and appreciate that he is there as a teacher. This is the phase of the medical witness, on which I especially wish to speak.

No one can be a successful teacher unless he knows human nature. He must in this work understand something about the psychology of the judge, the attorneys, the jury, and even the audience. Let us first touch on the psychology of the jury. When you come to consider a jury, you must remember that you are dealing with twelve men or women who have sworn to put away any former views or opinions which they may have had in regard to this particular case. They are to listen to the evidence as presented, they are to be the sole judge of the truthfulness and reasonableness of that evidence as it appears to them. They are to take the instructions as to the law governing the case from the judge.

The members of the jury will vary a great deal as to training, education and experience but they must mold all this into a common opinion on the question before them. There is a foreman to a jury, and you all know what an intelligent chairman may do in every life in forming the opinion of his committee. It is equally true that a foreman may sway the other members of the jury in forming their opinion. Again, remember that certain men on that jury will be more interested in the subject as presented than others. Some will be more easily prejudiced than others, some will be more easily led than others and some will be more indifferent to what is taking place in the court room than others. In fact, everything that occurs in that court room during a trial may have a part in forming the opinion of the individual members of the jury.

The evidence as presented by the witness should, of course, be the greatest factor in forming such an opinion. Therefore, the witness should first endeavor to obtain, and retain the attention of the more intelligent members of the jury, for they in turn are expected to do some teaching later on. He must not fail to carefully study the personnel of the jury sufficiently closely so that he may detect signs of bewilderment or lack of understanding of the less intelligent, and simplify his answers to the point of interesting them. He will observe a third class, those who show signs of weariness and possibly indifference as they have already made up their minds and are opposed to the cause which he represents, but if he talks directly to them, he will very soon attract their attention and not only that, but will attract the attention of the other members of the jury to them, which is bound to cause a feeling of self-consciousness or guilt and will probably lessen their hostility at a later date in the jury room.

The jurymen very quickly feel the earnestness of the witness. They note his desire to be fair or unfair, they note his desire to give them the information which they should have on a subject in order that they may intelligently study the same. I feel that the average jury appreciates such conduct on the part of the witness, particularly the one who is talking to them on a technical subject. They are trying to obtain in a few hours what you have spent years in obtaining. Why should you not be willing to take the time and care to educate and to assist them in forming a just conclusion in place of let-

ting the attorney in his own way tell the jury what you think about the case.

We must remember that attorneys are present in an entirely different role. They are there to represent the interests of their clients. They are there to bring out all that which is favorable to the interest of the client and to suppress as far as possible those things which are unfavorable. They take advantage of technicalities to do these things. They are guided largely by the things which have occurred in the past. I mean by former rulings and decisions of both the lower and higher courts. They are not under oath to testify, therefore they are free to make statements which might be misleading.

We find many different types represented in the legal, just as in any other profession. We find the type that is aggressive and attempts to force information, frequently forcing the wrong information, for the purpose of confusing the witness. These men generally enjoy getting the witness into an argument and often take what we consider unfair methods in their cross examinations. We have the attorney who is quiet and easy in his manner, simply asking questions without any attempt at leading or deceiving the witness, apparently paying little attention to answers given and neither obtaining full information from his own medical witness, nor covering the subject from cross examination of others. We find the type who is courteous, who gradually and slowly leads up to a certain point, who sees in advance the question which he wishes to ask and anticipates the answers which will be given and is careful that all the information is presented to the jury, even repeating or rewording questions so as to bring home again and again a point which he wishes to make. We find the man who is very courteous, in fact more than courteous with the witness, and who by this is able to draw from the witness many more favorable answers than if he were to assume hostile or aggressive tactics. Again remember that attorneys take as their bible what has happened in the past in a given case, may be twenty, thirty or forty years ago in Michigan, New York, Oklahoma or some other state, whereas with the medical man the important thing is not what has happened years ago, but what is happening now and what is the scientific truth today. Care in making such points clear to the jury is very important under certain circumstances.

The mental characteristics of the court should be known to the witness and observed by him, for

he may find that in one case the judge takes practically no part in the proceedings, being indifferent to what happens just so long as the law is followed and he rules correctly on legal points. You may find one who takes an active interest in all testimony, follows closely the proceedings, is fair and anxious to assist the witness to present all the facts to the jury. Sometimes it would almost appear that he steps outside his place as a judge to bring from the witness information on a given point. At other times he is short, curt and very critical of the manner in which the witness acts in his court. All these things are important to observe in order that you may not call forth the displeasure of the court.

The public, frequently by their attitude in a court room, have an effect upon the witness and the jury. They seldom attend court because they are interested in the city, county, state, or corporation side. They are more liable to be there because they are interested in the individual and very soon make this interest apparent by nodding or shaking the head, by facial expressions and other means. It is very important that the witness never permit the conduct and actions of the audience to in any way influence or disconcert him.

Many of our medical men pay too little or too much attention to the fact that they have taken an oath to tell the truth, the whole truth and nothing but the truth, and they feel that this is grossly mistreated when they find that they are prevented from telling the truth by many objections and technicalities which arise in the course of being examined. They should remember two things: first, that they are to tell the truth and there is no occasion or need for telling anything else but the truth and, second, that it is impossible for a human being to tell all he knows about a subject. They are only expected to tell what they remember and what they feel has a bearing on the particular case at hand. They must remember that frequently, when an opinion is given, it is advisable to lay before the jury the reasons for forming such an opinion. Therefore, it is important that many facts be given by the witness, both as I have already said from the standpoint of educating the jury on the subject under discussion, and for the purpose of letting your jury see on what you based your conclusions when you rendered a given opinion. Now all this can be given regardless of technicalities in court procedure, if the witness is only careful and makes the opportunity for the bringing out of such information, not by the cross-examiner but

by his own attorney later on in redirect examination.

All this assumes that your medical man fully appreciates why he is a witness and that he is willing to adjust himself to his surroundings and give his time and attention to the work that he is doing. There are, of course, many different types of medical men and we cannot always change these types but we may reasonably expect that each one should have a good working knowledge of the subject which he is discussing. He must be tactful, attentive, patient, must conduct himself in such a manner as to demand the respect of the court, the interest of the jury and the watchfulness of the attorneys. He must never permit himself to be hastened or crowded by the aggressive examiner; he must never be led to say those things which he is uncertain of as they may come back to him later. He must not enter into arguments with the attorneys; he must remember that his one and sole object in being in that court room is to instruct the jury on the question under discussion, and if he cannot give them reliable information, let him say he does not know or does not remember. It is no disgrace to forget. He should always be able to render an opinion on a subject which calls for judgment, if he has a knowledge of the subject.

He must at all times talk directly to the jury, face the jury, explain to the jury, until he is satisfied that they understand what he is talking about. He must remember that he has rights, that those rights can be obtained, not by appealing to the court, but by endeavoring to explain to a jury his answers. He will be given his opportunity of explaining and herein lies a great opportunity for correct medical teaching, teaching which will properly educate both the court and the jury on scientific medicine and not be simply a matter of answering questions with an effort at evading true conditions and protecting the side which he is representing. In other words, the physician should not attempt to follow the lead of his attorney. He is there in an entirely different role to that of the attorney, and could we but influence our medical witness so that he would teach scientific medicine in the court room, we would do much to correct public opinion regarding medical testimony.



## ECTOPIC GESTATION\*

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This condition, which was considered one of the most dangerous of all accidents connected with pregnancy up to 1884, is now looked upon, with modern methods of treatment, as not necessarily dangerous to life. A prompt diagnosis, together with proper care and usually early operation, will save practically all of these cases.

Pregnancy may take place near the cervix of the uterus, resulting in placenta previa; in the body of the uterus, resulting in normal pregnancy; interstitially, that is, at the junction of the tube and the uterus; in the isthmus of the tube; or in the ampulla of the tube. Extrusion from the ampullar end may take place, and if slowly, causes death of ovum and encysted hematoceles of various sizes. The isthmic variety may rupture into the broad ligament or directly into the abdominal cavity, causing severe hemorrhage and all the classical symptoms of collapse. The interstitial variety is the most dangerous because the hemorrhage is likely to be the most severe, and death may occur before help can be obtained. This variety may go on much longer without rupture than either of the other forms. When rupture does occur, the hemorrhage is frequently so excessive that very prompt measures must be taken to prevent rapid death.

Other varieties are ovarian pregnancy, or the ovum has been known even to attach itself to the omentum. These abnormal pregnancies are supposed to be developed about one in five hundred and are probably more frequent than that. Some writers have claimed that all cases of hematocele or encysted blood clot, in and about the tube, are ruptured tubal pregnancies. This is difficult to prove because of the fact that true decidua is seldom found in these cysts. Also, undoubtedly hemorrhages do take place into the peritoneal cavity through or from the fallopian tube that may come from other causes.

Infections of various kinds, but mainly that of gonorrhea, play a role in these abnormal implantations. Congenital defects, obstructions and changes of position, as well as mechanical or acquired conditions, also have to do with the attachment of the ovum in different locations. Inflammatory tubal changes, mainly due to pelvic peritonitis, are etiologic factors. The taking of drugs which may

\* Read before Clallam County Medical Society, Port Angeles, Wash., May 20, 1924.

cause spasmodic contraction of the tube, the large size of the ovum, also have been given as causes. The writer has known of at least one case that followed uterine curettage three months previously. However, it is always difficult to tell the exact causation.

**Pathology.** The uterus usually undergoes a slight enlargement and becomes softened in the early stages of tubal pregnancy. Its position changes little at first but as the sac grows it is displaced more or less. At times a small cast, somewhat similar to decidual membrane, is cast off, usually in small particles and this itself may be a symptom in diagnosis.

Naturally the change in the tube becomes marked, usually becoming spindle-shaped, and numerous adhesions form with the bowel, uterus and possibly the bladder. The walls become vascular at first but, as they are stretched, really become thinner in some places. The decidua vera is unquestionably formed, but is not as firm or as true structurally as that formed in the uterus. In fact, in many places the mucous membrane lining the tube seems to be formed into the decidua. As to whether the decidua reflexa has been formed is disputed, but usually there is a layer of tissue between the tubal wall and the embryo. It becomes invaded with fetal ectoderm which has been named the pseudo-reflexa. The decidua serotina is usually only partially developed, is very thin, making it easy for rupture of the maternal vessels to occur and cause a blood clot which separates the poorly developed placenta from its attachment and thus becomes an important factor in the tubal rupture and ectopic abortion.

Rarely the fetus may develop without rupture of the tube. It may die while still in the tube and become absorbed or undergo other changes. Tubal extrusion of the ovum with membranes may take place or tubal rupture may occur. In the first instances the nature of the pregnancy may not be diagnosed, false labor may set in and, unless operation is performed promptly, the child dies.

Very much more commonly death of the fetus occurs in the unruptured tube and, if the distension does not become great enough to rupture it, a tubal mole may result which may be of various sizes. This, of course, is a very favorable termination of a serious condition. Extrusion of the ovum from the fimbriated end must be differentiated from rupture of the tube and is very much more common than rupture, according to Noble.

It is supremely important that a recognition of this condition should be made early. With proper diagnosis, an early operation, that is, before rupture of the sac, is the ideal treatment. Unfortunately this is rarely the case but, if the attendant remembers the diagnostic points, namely, overdue menstruation, sudden acute pain, bloody discharge, with or without shreds, tender and enlarging mass behind or to one side of the uterus, without accompanying fever, he will be less liable to err. Rarely the hemorrhage may be so severe that immediate operation is imperative. Crossen recognizes two classes, one in which there is a sudden severe pain and collapse without apparent cause, the other being a tender mass, pain, etc., as outlined above.

It must be remembered that unusual forms of uterine pregnancy may be mistaken for ectopic gestation. Cases complicated with myomata, salpingitis, ovarian tumors, and retroversions may complicate and make diagnosis more difficult. Cases may occur in which there is both an intra- and extra-uterine pregnancy. In one of these during the past year I failed to make a diagnosis and after delivering the woman of a normal child a rapid enlargement in one side of the abdomen which I diagnosed as ovarian cyst was later found to be an extrauterine pregnancy. Centre reports such a case in which the sac ruptured first. Patient was operated on and pregnancy went on to full term.

Early diagnosis is the main factor in saving life in these conditions. This does not necessarily mean immediate operation because I firmly believe that too hurried operations many times will mean the loss of the patient. Usually by the time the diagnosis is made the principal harm has been done. The bleeding has stopped and other methods than operation will suffice to tide the patient over the critical period, when she has suffered from severe loss of blood and the vital powers are at a low ebb, namely, warmth to the extremities, absolute quiet, relieving of pain, and last but not least, complete abstention from foods and liquids by mouth. No enemas should be given. If necessary, strychnia or whiskey hypodermically will strengthen the heart beat, or small amounts of salt or glucose solutions may be given by Murphy method per rectum. By following this procedure a surgeon can take his time in getting ready to operate, and oftentimes he will be surprised at the increased ability of his patient to stand the operation.

The mortality today is four to seven per cent, a wonderful improvement in the last twenty years,

but still too large when we consider the advances made in other and equally dangerous surgical emergencies.

The writer fully realizes that his experience is limited and diffidently presents these cases with the idea in view, first of showing that cases with extensive bleeding may live for two weeks without operation after having had collapse and other classical symptoms of abdominal hemorrhage; second, that withholding absolutely of all foods and fluids by mouth, together with sufficient opiate to relieve the pain, will at least go a long way toward checking the bleeding, and not only this, but the patient will rally with nothing more than this plus heat to extremities and absolute quiet. Then we can operate at our leisure and feel masters of the situation.

I submit the following case reports:

Case 1. Mrs. A. C., Dungeness, Wash. I was called January 10, 1910 to see patient in the middle of the night and found her in great pain. Gave her one-half grain morphia. She had passed menstrual period about ten days when she was seized with severe pain in left side. A doctor was called who administered a sedative and prescribed rest in bed. Within two days she was up and around doing her housework. On the fourth day she was again seized with severe pain, when the doctor was again called and the same treatment pursued. She again recovered sufficiently to be up and around the house. On the ninth day, the day previous to my being called, pains again supervened. The doctor was called and remained most of the night. At the time I was called in examination and history pointed strongly to ruptured tube and free fluid in abdominal cavity.

Patient was carefully transferred to Port Angeles General Hospital and operated on immediately. On opening peritoneum, free blood poured from cavity onto the table and floor. Left hand was quickly passed to left fornix and tube seized between finger and thumb, long forceps slipped up the tube at this point and clamped. This was brought up to view and tube was clamped below. A small six-weeks ovum was found with clotted blood in cul-de-sac. The tube was ruptured at isthmus with a one-inch rent. Broad ligament layers were overlapped and closed with running sutures. Clots were removed and abdomen wiped dry. The wound was closed without drainage. Patient left the hospital on the seventeenth day, convalescence having been normal. Since this time I have attended this patient in three labors, all of which were normal.

Case 2. Mrs. J. P., age 24; one child of four months. Patient came to my office October, 1914, giving history of having passed menstrual period and complaining of pain in lower right side of abdomen. This had existed for about six days. Examination revealed small mass, apparently fluid, to right of uterus. Patient had no temperature and was not ill but complained of constant pain. As the symptoms pointed strongly to hematocele, operation was advised.

Patient was taken to the Port Angeles General Hospital and operated on the fourth day following. A small walled-off blood cyst was found in lower right quadrant of abdomen. Small ovum, partly necrosed, was found completely extruded from fimbria. Blood was wiped out and, as the tube seemed healthy, only a small portion of distal extremity was resected and wound closed. No trouble super-

vened from the operation. Convalescence was normal and the patient left the hospital on the eighth day.

This patient subsequently become insane and was committed to an asylum.

Case 3. Mrs. A. J., age 26; one child. I was called to Clallam Bay June, 1917, during the night by the doctor in charge, and was asked to bring a nurse. Arrived at midnight but did not operate until the following morning.

Patient was taken with severe pain five days previously. The doctor made a tentative diagnosis of pneumonia. Her temperature was 101° and breathing somewhat difficult. On the fourth day, however, the tenderness and enlargement of abdomen attracted his attention, and he felt that some serious condition was developing there. Eight weeks had elapsed since menstruation. Examination revealed abdomen filled with fluid and history pointed to ruptured tube or ovary.

An improvised operating room was utilized in an old shack. Patient was etherized, abdomen opened and left hand passed quickly down to uterus. Right tube was grasped and brought up. This was clamped by long forceps before making any attempt to mop up the blood which was flowing freely over the table. Blood was now wiped out together with clots, when exploration revealed tube torn in middle third, posteriorly, and a seven weeks ovum partly extruded. This, with tube, was removed en masse. As this patient had gone five days with a great quantity of blood in abdominal cavity and with a temperature running up to 102°, it was deemed advisable to use drainage. Drain was removed on the third day and provisional silk-worm gut suture tied. Convalescence was normal and smooth.

Case 4. Mrs. S. R., age 34, Carlsborg, Wash.; two children, 12 and 16. Patient came into my office March 19, 1922, complaining of pain and swelling in lower right abdomen and said that she had suffered severely five days past menstrual period and at that time there was slight flow. She remained in bed two or three days but did not call a physician, after which she was able to be up and about. However, the pain, soreness and swelling continued and, finally, fourteen days after the pain had begun, she sought relief.

Examination revealed medium large fluctuating mass to left of uterus and extending to cul-de-sac. Operation was advised.

Patient was taken to the Port Angeles General Hospital the next day and operated on. Abdomen was opened in median line. Medium large and walled-off hematocele of left side was found, also a small rent near end of tube with four weeks ovum partly degenerated and completely imbedded. Blood clots were found within the cyst. Outer third of tube was resected. Clots were wiped out and wound closed. Patient left the hospital on the sixteenth day.

Case 5. Mrs. F. B., age 25, Port Angeles; three children, youngest 6 years. I was called to see patient on the evening of October 8, 1923. I found large, well nourished woman weighing 180 pounds, height 5 feet 8 inches.

Fourteen days previously she was seized with severe pains in abdomen, which were serious enough to necessitate calling a doctor, who made a diagnosis of bowel trouble, gave her cathartics and assured her that she would be all right in a day or two. He was called again several times, each time assuring her that she would be all right shortly and there was nothing wrong. She had no fever at that time and the pain was not constant. She vomited intermittently and was somewhat tender over stomach. Any solid food brought on the vomiting and pain.

At the time of my call she was in constant pain, abdomen moderately tender and very much bloated. Palpation revealed tender area in lower left quadrant. She claimed that at the time of taking ill she menstruated for three days which was her regular period, and, previous to this she had had no trouble or pain.

Her temperature was 98°, pulse 80 and respiration 19. A vaginal examination revealed a small mass on left side which was quite tender. Uterus was also tender and movable. She was put on a restricted liquid diet and next day transferred to the Port Angeles General Hospital. Blood pressure showed systolic 122, diastolic 76. There was no appreciable change in condition except that she was more comfortable. Diagnosis was made of ruptured tube or ovary, probably ectopic gestation. Accordingly, she was operated on in the morning.

A great deal of clotted blood presented itself at the abdominal incision on opening peritoneum. Clots of blood were adherent everywhere to coils of intestines and in cul-de-sac. Much fluid blood was also present and a large mass of clots was removed from under spleen. Much difficulty was encountered in removing clots adherent to coils. Tube was clamped off quickly and sac removed. Broad ligament was closed over and large tube with several gauze wicks were passed down to cul-de-sac and wound closed. Operation took one hour and thirty minutes. As patient withstood anesthetic well it was deemed advisable to remove clots as completely as possible. Wound was dressed frequently for sixteen hours, when drains were entirely removed and provisional suture tied.

Case 6. Mrs. W. E. V., Port Angeles, age 31; one child, 12 years. Patient had good health except for attack of "flu" in 1918. Called to see her at 10 p. m. on the evening of April 7, 1923. Found her in extreme pain in lower part of abdomen, hands and legs cold, pulse 120, weak and rapid, and of abdominal character. Examination revealed abdomen flaccid, no distension but it was somewhat tender over lower left side. Vaginal examination was unsatisfactory on account of tenderness, but uterus appeared tender and not freely movable. I gave her hypodermically one-fourth grain morphia and one-

twentieth atropine and repeated in one hour. Made tentative diagnosis of abdominal hemorrhage, with possibility of ruptured ectopic gestation. All food and fluids were withheld and heat was applied to body and extremities.

At 2 a. m. was called again and found patient screaming with pain, claiming that she had only had a brief relief from the opiate administered earlier. At this time, gave her one-half grain morphia, hypodermically, with one-thirtieth strychnia as pulse was weak. However, her extremities were now warm. I told her we would operate early in the morning. She was taken to the Port Angeles General Hospital at 8 a. m. the following morning. By this time the pain had disappeared and she was resting well. The severe symptoms had subsided, and delay in operating was permissible. There was considerable distension at this time, so rectal tube was passed and small amount of saline solution was given through this, all food and fluids being withheld absolutely. Strychnia, one-fortieth grain, was given every four hours hypodermically.

Operation—Patient was given hypodermic one-fortieth grains strychnia before ether was started. Abdomen was opened rapidly, much black blood escaping and running over the table. Left hand was passed rapidly down to fundus of uterus and left tube grasped at base between finger and thumb. It was gently lifted up to the surface. A huge rent was found at the posterior and lower wall of tube and posterior wall of broad ligament, extending about three and one-half inches. Pelvis was filled with clotted blood and much was separated from the folds of intestines. This was rapidly removed, tube was ligated, and folds of broad ligament closed by overlapping sutures. Hot salt solution was used in sponging out cavities, and wound closed.

Patient withstood the operation well and was returned to her room within sixty-five minutes. She was given two ounces of black coffee through rectum, and three ounces of salt solution. This was well retained and she was kept on rectal feeding for twenty-four hours, then gradually given fluids freely.

Convalescence was uninterrupted except for crampy pains at times due to slight adhesive peritonitis caused by semiorganized blood clots.

**Chronic Roentgen-Ray Dermatoses as Seen in the Professional Man.** H. N. Cole, Cleveland (Journal A. M. A., March 21, 1925), defines the chronic roentgen-ray dermatoses as those characteristic skin changes seen especially on the uncovered parts of workers exposed to greater or lesser degree, and without protection, to the action of the roentgen rays. He reviews the literature of the disease and cites nine cases, seven of them occurring among physicians and other working with roentgen-ray apparatus. Cole regards the condition as being a degenerative process due to sclerosis of the blood vessels supplying the corium, with resultant loss of nourishment and of resistance or balance on the part of the upper corium. There then ensues an increased proliferation of the epidermis into the corium in its search for nourishment. It finally becomes parasitic, it grows wild, and the epidermoid carcinoma results. In six of the cases reported, a clinical diagnosis of malignant degeneration was made, and was confirmed microscopically in three, these three being the only patients allowing microscopic examination. Two of these physicians have had a finger removed because of malignant change, and one has undergone several major operations, lost a thumb, had glands dissected out and finally recovered through this and the use of electrocoagulation and radium.

**Present Status of the Phenoltetrachlorophthalein Liver Function Test.** Observation made by Siegfried Maurer and L. C. Gatewood, Chicago (Journal A. M. A., March 28, 1925), indicate that the dye is removed from the blood stream as other colloidal dyes, and is not removed from the blood stream originally by the liver alone. It is shown that the rate of removal from the blood stream of the colloidal substances used for liver function tests is influenced to some extent by varying degrees of immunization. The rate of disappearance from the blood stream, while showing certain definite changes in cases of advanced liver disease, is apparently not a true index of impairment of liver cell function. Determination of the dye in the duodenal content is, in the light of our present evidence, a more logical index of liver function. The injection of substances of this group is not without danger. There is here offered a new method of determination of the dye in the blood by which it is possible to establish more completely the curve of the disappearance of the dye from the blood stream. The ideal dye for a liver function test must be nontoxic; it must be crystalloid; its primary removal from the blood stream must be solely by the liver; it must remain in the blood a sufficient length of time for determination to be made, and its ultimate removal from the organ must be solely by the liver parenchyma cells.

# NORTHWEST MEDICINE

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Oregon, Washington, Idaho and Montana

Devoted to the interests of the Medical Profession of the  
Pacific Northwest

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## EDITORIAL

### DEATH OF DR. W. T. WILLIAMSON

Elsewhere in this issue will be found a splendid address to the memory of Dr. Williamson which may be read with profit by any and all who seek or have ideals. The following remarks are supplementary and designed not to replace, but to call attention to this deserved tribute to a great man who has gone before.

Dr. Williamson came to Portland in 1903 after serving seventeen years as assistant superintendent of the State Hospital for the Insane at Salem. The experience gained there had ripened and was used to great advantage in private neuropsychiatric practice. Thousands of afflicted persons benefited from his counsel and advice, and to within a few weeks of his death he saw a certain number of patients. But with the passage of years, he manifested less desire for personal contact with patients and derived greater and increasing pleasure from his dealings with the profession of medicine as a whole. He served as president of the Portland City and County Medical Society and of the Oregon State Medical Society, but, unlike a majority of these who are elected to these and similar highly honorable offices, he willingly accepted lesser posts after he had completed his terms of service in the greater ones. As evidence of his earnestness and his keen observation, about six weeks before his death there was a newspaper controversy between two medical officials, comparatively unimportant in itself which, however, did not escape his keen scrutiny. Although he was ill at the time and not physically fit to work, he took time to write a note to the counsellors of the City and County Medical Society, calling attention to this controversy and suggesting that publicity in matters of this kind was injurious to the reputation of the entire profession of medicine. This note, brief, pointed, courteous, and simple though it was, made a profound impression on the writer of these lines which he will not readily forget, and was the means of stopping the controversy. His influence in similar matters was unequalled by that of any other physician in the Pacific Northwest.



WALTER T. WILLIAMSON  
Aug. 6, 1850—March 2, 1925

Perhaps it may not be inappropriate to refer briefly to his services as an expert witness. In this he took great pride, without egotism, and justly so. In addition to his gift of speech and logical coherence of thought, he possessed a singularly benign appearance which was frequently commented on, especially in outlying sections, where his appearance in court as an expert invariably caused attention to be focussed upon him. The newspapers described him as possessing a judicial poise and a patriarchal appearance which inspired great confidence, and many highly laudatory comments were written of him.

He was a splendid teacher and it may well be regretted that his lucid method of presentation of facts could not have been more extensively used in medical education. He taught for many years in Willamette Medical College at Salem, and there must be many to whom this journal will come who will have pleasant memories of sitting at his feet. More recently he was urged by the late Dr. K. A. J. MacKenzie, then dean of the University of Oregon Medical School, to teach in that institution, but he refused to do so on the ground that he was reaching an age where it was his duty to give place to younger men.

His connection with *NORTHWEST MEDICINE*, since its adoption as the tristate journal for the

associations of Oregon, Washington and Idaho in 1909, has always been that of a wise counsellor and his judgment on any matter referred to him has always been accepted and followed. He was a member of the committee that established the journal in this relationship and has always been one of the trustees, representing the Oregon State Society. His loss in this capacity will be greatly regretted.

The immediate cause of his death may be not without interest. Although in his methods of thought and appearance he was very active and seemingly healthy, he spent much time every year away from Portland, seeking relief from asthma and attacks of bronchitis. About a year and a half ago, while in San Francisco, he had a cardiac attack which was followed by myocarditis with increasingly frequent attacks of anginal pain. The immediate cause of death was chronic myocarditis.

In addition to his great interest in medical affairs he was active in lodge work and at one time was Grand Master Mason of the State of Oregon, and the following year held an analogous position in the I. O. O. F. He was on many boards and commissions at one time or another for these societies, participating especially in the control of the homes which they built and fostered.

The physicians of America have lost a great friend in the death of Dr. Williamson. More intimately, the Pacific Northwest has lost a splendid physician, an able psychiatrist and a medical expert of premier ability, and the medical profession has lost a counsellor and advocate of shining qualities. Calm, serene, undaunted and unafraid, death must indeed have been to him "the great adventure." No praises that may be sung over him will be too great, no honors that may be conferred will do justice to his merits.

#### THE PHARMACOLOGY OF ARSPHENAMINE

The work of Ehrlich in establishing arsphenamine as a successful therapeutic agent in syphilis was more or less empirical in spite of his deliberate choice of arsenic as the calculated agent necessary for the spirocheticidal action desired. In the sixteen years that have elapsed, much study has brought forth only a partial clarification of its mode of action.

That arsphenamine itself is not the active agent that kills the spirochetes was long suspected, even though Ehrlich<sup>1</sup> believed otherwise. Noguchi<sup>2</sup> and Hata<sup>3</sup> showed that spirochetes and trypanosomes

survived long contact with concentrations of one to one thousand of arsphenamine in vitro, a concentration far in excess of that occurring in the blood. Some writers have postulated that arsphenamine activated the immunologic apparatus, a theory scarcely tenable when we know that arsphenamine injections kill trypanosomes in so short a period as six or eight hours. Voegtlin and Smith<sup>4</sup> have shown that a latent period of two or three hours exists before arsphenamine begins to destroy spirochetes in the blood of experimental animals, while solutions of arsphenamine that have been allowed to oxidize by standing begin destroying spirochetes at once, and their destruction is rapid directly as the concentration of arsenoxide (oxidized arsphenamine) increases. It is reasonable, therefore, to assume that arsenoxide is the parasiticidal agent active after arsphenamine injections. The particular applicability of the various arsphenamines and derivatives rests in the slow production of arsenoxide, for the double reason that large doses of arsenoxide are toxic to the tissue cells, and because it is more toxic to spirochetes by *prolonged* contact than by concentration alone. This view of the action is supported by many clinical facts, especially that toxic manifestations occur late, if physical toxicity is avoided, and that arsenoxide is very many times more toxic in experimental animals than arsphenamine.

The mode of action of arsenoxide is now fairly well understood, though not susceptible of mathematical proof. Glutathione, a sulphhydryl, is an enzyme-like body, occurring in all active tissues which transport hydrogen in the various oxidizations and reductions concerned in metabolism. Arsenoxide siezes upon the sulphur of glutathione, rendering it inactive as an enzyme. Similar sulphhydryls, also acting as enzymes or carriers of hydrogen in oxidization and reduction processes, occur in the protoplasm of the parasites. Apparently these sulphhydryls are seized upon with much greater avidity than glutathione by arsenoxide. This explains the greater toxicity of arsphenamine (through its arsenoxide) for the parasite as compared with that of the tissue cell. Glutathione would, therefore, be the logical antidote to arsphenamine, its action being that of a buffer. Reasoning from analogy, upon the

1. Ehrlich: Abhdl. über Salvarsan, 1913 iii München. The Lancet, 1913, ii, 445.

2. Noguchi: Jour. Pharm. Exper. Therap., 1913 iv, 333.

3. Springer, Julius: Die. Exper. Chemother. d. Spirolozen, 1910, Berlin.

4. Voegtlin and Smith: Jour. Pharm. Exper. Therap., 1920, xvi, 199.

presence of the sulphur atom probably depends the value of sodium thiosulphate as a therapeutic agent in exfoliative dermatitis of arsenical origin.

The physical toxicity of arsphenamine, that to which most early reactions are due, is of great importance, since it depends so often upon errors in preparation of the solution. Because these reactions come so early they have been called "anaphylactoid." They are, however, of two types, depending upon whether the solution is alkaline or acid. In alkaline solutions they are due to a rise in pulmonary artery pressure and dilatation of the right heart with consequent fall of arterial pressure (Jackson and Smith<sup>5</sup>). In acid solutions a similar disturbance has been produced experimentally by multiple small infacts, regarded at first as produced by emboli of precipitates of protein, but Karsner and Hanzlik<sup>6</sup> have shown them to be due to agglutinated blood cells. In view of the semi-colloid nature of arsphenamine and its insolubility at the blood pH, it is not at all surprising that these precipitates and agglutinates occur.

The continued use of the Swift-Ellis method of treating neurosyphilis would bespeak for it some special therapeutic value. Voegtlin et al<sup>7</sup> have shown that the spinal fluid contains more arsphenamine after injections than does the blood. In the light of this finding it is difficult to attribute to the Swift-Ellis method any advantage other than that which Dercum calls spinal drainage.

The difficulty in neurosyphilis has been particularly the lack of penetrability of the tissues of the central nervous system. This has been partially remedied by the introduction of the somewhat more diffusible tryparsamide and sulpharsphenamine. This greater diffusibility is produced by chemical substitutions in the amino group of arsphenamine which in all cases leads to greater solubility and dispersibility. For that reason the tissues of the central nervous system are penetrated better by substitution products, such as tryparsamide and sulpharsphenamine.

F. E.

5. Jackson and Smith: *Jour. Pharm. Exper. Therap.*, 1918, xii, 221.

6. Karsner and Hanzlik: *Jour. Pharm. Exper. Therap.*, 1920, xiv, 479.

7. Voegtlin et al: *Public Health Reports*, 1923, xxxviii, 1003.

### DRUG ADDICTION

Publicity as to facts and consequent solicitation of public interest present one of the most effective measures for the control and suppression of widespread evils. During the many years when addic-

tion to narcotics was extending throughout this country, and no widespread movement existed for its control, there was a justifiable apprehension that this might develop into a national menace. During recent years, however, the enthusiastic efforts of individuals, combined with the agitation of organized bodies, have served to focus the attention of the public and our legislators to the extent of checking this growing evil. Now that it has become a subject of international consideration, there is a prospect of greater reduction and the possible elimination of this growing vice.

At times there have been conflicting reports as to the actual number of addicts in our country. A few years ago the extremists ventured to estimate their number to the extent of seven figures. Recent authorities, however, in various sections of the country agree that at the present time the number in the whole land probably does not exceed 150,000. The United States Public Health Service has stated that a few years ago the victims of the narcotic vice probably numbered about 260,000. At the present time some authorities even place the number as low as 110,000. The opponents of prohibition have loudly proclaimed that the prohibition constitutional amendment has been responsible for increased drug addiction. On good authority, however, it is stated that the number of addicts has steadily declined both before and since the enactment of the prohibition amendment. All these facts being taken into consideration, it would seem as if the encouraging prediction is justifiable that drug addiction is destined to materially decrease in the future.

### P. N. M. A. JUNE MEETING

Arrangements are being made for the meeting of Pacific Northwest Medical Association at Portland which will insure this being one of the best meetings which the organization has held. The program, so far as it has been developed, appeared in our last issue. More details of this will be published later. The men on the program thus far secured are as follows:

A. N. Drury, M.D., B.Ch., M.A. Full Time Research Worker, Medical Research Council, England. Honorary Assistant, Cardiac Dept., University College Hospital, London.

Sir Henry M. W. Gray, K.B.E.; C.B.; C.M.G.; LL.D. and M.B. Aberdeen (Scotland) F.R.C.S., Edinburgh; Surgeon in Chief, Royal Victoria Hospital, Montreal, etc.

McKim Marriott, M.D. Prof. and Head of Dept. of Pediatrics, Washington University, St. Louis, Mo.

Nathaniel Allison, M.D., Prof. of Orthopedic Surgery, Harvard University, Chief of Orthopedic Service, Massachusetts General Hospital, Boston.

HOTEL	Single, Without Bath	Double, Without Bath	Single, With Bath	Double, With Bath	Extras
Multnomah.....	2.00, 2.50	3.00, 3.50	3.50, 4.00, 6.00	5.00, 6.00, 8.00	(twin beds with bath 6.00, 8.00)
Benson.....			4.00, 5.00, 6.00, 7.00, 8.00	6.50, 7.50, 8.00, 10.00, 12.00	.....
Portland.....	4.00 (3 per. 6.00, 4 per. 8.00)	4.00	7.00	7.00	.....
Imperial.....	2.00, (twin beds 4.00)	3.00 (twin beds 4.00)	2.50, 3.00, 3.50, 4.00, 5.00	4.00, 5.00 (twin beds 6.00)	.....
Roosevelt.....			3.00, 4.50	4.00, 5.00	Shower 2.50, 3.50
Nortonia.....	2.00 up	2.50 up	2.50 up	3.50 up	.....
Seward.....	1.50 up		2.50 up		.....
Mallory.....		2.00, 2.50	3.00, 3.50	3.50, 4.00	.....
New Perkins.....	1.00	1.50	1.50 up	2.50 up	.....
Sovereign.....	Nothing but 3-room apts. with bath, with everything for light housekeeping. Rates 6.00, 7.00, 8.00 per person, according to location of apartment.				

Lewellys F. Barker, M.D., LL.D., Prof. Clin. Med. Johns Hopkins University, Visiting Physician, Johns Hopkins Hospital, etc., Baltimore.

James B. Herrick, A.M., M.D., Prof. and Head of Dept. of Medicine, Rush Medical College, Physician in Chief to Presbyterian Hospital, etc., Chicago.

George Neil Stewart, M.A., D.Sc.; M.D.; LL.D.; Prof. Exp. Medicine and Director The H. K. Cushing Laboratory, Western Reserve University, etc., Cleveland.

Henry Woltman, Ph.D., M.D., Neuropathologist Mayo Clinic, Rochester, Minn.

Reginald Fitz, M.D., Associate Prof. of Medicine, Harvard University, Boston.

Barney Brooks, M.D., Associate Prof. of Surgery, Washington University, St. Louis.

Robert L. Benson, M.D., Prof. of Pathology, University of Oregon, Portland.

The Portland Committee is arranging for a large commercial and scientific exhibit which will probably surpass anything which has been presented in the past. There will also be extensive pathologic exhibits from Good Samaritan Hospital and several departments of University of Oregon Medical School. Exhibits are requested from private physicians as well as hospitals.

There will also be meetings of other organizations. The North Pacific Pediatric Association will hold its annual meeting at the Multnomah Hotel, June 29. The orthopedists of the Northwest will also meet and organize the Pacific Northwest Orthopedic Association. A loud speaker will be installed by the Portland Oregonian so that there will be no difficulty in hearing.

Arrangements with the railroads will provide a reduced round trip fare, less than one and one-half the usual fare. This will apply to British Columbia, Alberta, Saskatchewan, Washington, Oregon, Idaho, Utah and Montana. One must remember that, in purchasing his ticket to Portland, he pays full fare for which he must receive a receipt. On presenting this to the secretary of the meeting, he will be entitled to the reduced return

fare, provided the requisite number of certificates is received.

Hotel reservations should be made at an early date by application to Dr. Frederick Epplen, Paulsen Bldg., Spokane, or Dr. J. Earl Else, Stevens Bldg., Portland. The list of Portland hotels follows:

#### UNIVERSITY OF WASHINGTON LECTURES

The ninth annual course of graduate medical lectures at Seattle under the auspices of the University of Washington, July 20-24, promises to rank as one of the most notable of the series. Dr. Lewellys Barker will bring to the profession of the Northwest the spirit of Johns Hopkins. He will present a series of addresses on subjects which are just now receiving general and intensive consideration by the profession. Dr. Vilray P. Blair, Professor of Surgery, Washington University Medical School of St. Louis, ably represents the very best talent in that medical center. His series of lectures will deal with medical and surgical problems of the face, including the bony structures and their sinus cavities. Professor John C. Clark, of University of Pennsylvania Medical School, will bring to us his vast experience of gynecology. Dr. Peter Bassoe, of Rush Medical College, Chicago, will cover a large and interesting group of neurologic and endocrine conditions. We have had splendid men from Chicago and this year's representative ranks with the best.

Clinics and other activities aside from the lectures will be arranged. The University of Washington and King County Medical Society cordially invite members of the profession in the Northwest to set aside that date for a profitable postgraduate course, and a pleasant vacation on Puget Sound.

## REDUCED FARE TO A. M. A. MEETING

The annual meeting of the American Medical Association will be held at Atlantic City, May 25, 29. There is always a goodly number of the profession from the Northwest who attend this meeting. Word has been received that the Transcontinental Railway Association has authorized the sale of excursion one and one-half fare tickets in states of the Northwest from May 18 to 24. Attention has also been called to the fact that the regular summer excursion rates will go into effect May 22, which provides rate of about one and one-tenth the usual fare. In order that one may not reach Atlantic City at too late a date, some of the doctors are planning to leave on the evening train of May 21, purchasing a regular fare ticket to the point reached at midnight. From that point the reduced summer excursion rate will go into effect. This means one can gain some time and yet take advantage of the lowest available railroad rates. (See Great Northern R'y advertisement, page 210.)

## BOGUS MEDICAL JOURNAL SOLICITOR

The bogus solicitor for medical journals is a nuisance who appears periodically in various localities. If any other physicians have been victimized by the one described below, this journal is prepared to give him further publicity. Physicians should be suspicious of solicitors for all journals who do not present properly certified credentials.

Bremerton, Wash.,  
March 4, 1925.

To the Editor:

On Feb. 6, 1925, a representative, giving his name as Boyd, solicited me for subscriptions to The Journal of the American Medical Association and Surgery, Gynecology and Obstetrics. I gave him a check which I made out to J. B. King. In reality I find that he is a false representative of the American Medical Association, and is not authorized to do business for it. He has been soliciting many of the doctors of this city and gives the names of prominent physicians in Portland, Ore., as identification. He claims to be a former medical student.

I am sure he is operating elsewhere and would consider it a great favor if you would start investigation in this matter, as he attempts to sell every periodical on the market.

Very truly yours,  
H. A. BARNER, M.D.



## MEDICAL NOTES

### NEW ADVERTISEMENTS

Attention is called to the following new advertisements appearing in this issue. The well known Katherine L. Storm Abdominal Supporter is presented on page 10. Shaw Supply Co. features the Alpine and Kromayer lamps (page 13). The Abbott Laboratories of Chicago describe established medical preparations (page 14). Dr. Manning's Home for Convalescent Children is at Santa Barbara, Calif. (page 5). Great Northern Railway explains Eastern excursion rates (page 210).

### OREGON

**Hospital Maintenance Vetoed.** Governor Pierce vetoed the bill passed by the Legislature, providing maintenance for the Doernbecher Memorial Hospital. The bill provided a sum of money for salaries and wages and a separate amount for operating expenses. The Governor explained that he did not believe in appropriating money from the general fund for maintenance of a hospital in Portland at this time. The institution is to be under the supervision of the University of Oregon Medical School, and will be a state institution. It is stated that work on the construction of the hospital will continue in spite of this financial misfortune.

**Physicians' Office Building Under Construction.** The seven-story Medical Arts Building of Portland, is under construction, the excavation having been completed. It will cost \$700,000, and provides for 225 tenants with seventeen retail stores on the ground floor.

**Head of Health Unit Resigns.** Dr. W. P. Holt, who has been at the head of the Jackson County health unit, has resigned and returned to private practice. This unit has done effective work among the needy sick of the county, its financial support coming from the state and county in combination with the Rockefeller Foundation.

**Elected Chief of Staff.** Dr. Leslie G. Johnson, of Marshfield, has been elected chief of staff for the new Wesley Hospital. This institution will serve the Coos Bay district. It is complete and up-to-date in its construction, and a model for a hospital of its size.

**The N. W. Jones Annual Lectures.** Dr. A. J. Carlson, of the University of Chicago Medical School, delivered two lectures last month in Portland under the N. W. Jones endowment. He discussed a number of vital medical questions of the day before large audiences from the profession of Portland and adjacent cities.

**Hospital Drive Planned.** The American Legion, of Portland, proposes to enlist the Legion of Oregon in a campaign to raise \$60,000 for the immediate needs of the Doernbecher Children's Hospital. This will insure the operation of the institution, in spite of the failure of the legislative action.

**Addition to Hospital.** An addition to Immanuel Hospital, of Portland, has been commenced, which will cost \$175,000. This will be devoted chiefly to maternity cases.

**Dr. W. T. Johnson**, of Corvallis, sailed last month for a European trip of several months' duration. He will visit Vienna, medical centers in Germany, France and England.

**Dr. Frank E. Fowler** has located for practice at Astoria. He was a former Oregon resident, and returns after his medical school and hospital experiences in the East.

**Dr. Joseph Wunderlich**, who has recently served as medical director at the Shrine hospital, is located for practice at Forest Grove.

**Dr. C. L. Taylor**, who has practiced for several years at Forest Grove, has moved to Los Angeles, Calif., where he will practice for the future.

**Dr. Roy Hamilton**, who has practiced at The Dalles for the past year, has returned to Portland, where he will resume practice for the future.

#### WASHINGTON

**Controversy Over Sewage Disposal.** The City of Walla Walla has for several months been engaged in a controversy over the disposal of its sewage and waste. Various plans for its safe disposal have been under consideration. Now farmers living on the Walla Walla and Mill rivers have brought suit against the city, claiming that the river pollution is a menace on account of the water being used for irrigation purposes. Some action to remedy the situation will soon be adopted.

**Increase of Deaths.** According to the report from the Vital Statistics of the State Department of Health, 713 more deaths occurred in Washington during 1924 than in 1923. Forty more persons committed suicide for 1924 than in the previous year. On the other hand, only 97 infants died in 1924 for 100 in the previous year. It is interesting to note the increase of deaths from measles, diphtheria, cancer and infantile paralysis, with a decrease from typhoid, influenza, whooping cough, smallpox and lobular pneumonia. The Commissioner of Health comments that the increase of deaths from diphtheria is a conclusive argument for the tracing and isolation of carriers.

**Appointed Medical Supervisor.** Dr. Walter Kelton, of Seattle, has been appointed medical supervisor in the department of labor and industry, whose headquarters are in Olympia. He succeeds Dr. F. A. Bird, who has been in charge of the department for a number of years. This is a very important position in connection with industrial insurance, and commands the highest salary of any state employe.

**Medical Director of Hospital.** Dr. J. B. Anderson, who was health officer of Spokane for a number of years, and later state commissioner of health, has been appointed in charge of the Veterans' Hospital at Knoxville, Iowa. During recent years he has been medical director of the U. S. Veterans' Hospital at Laramie, Wyoming.

**Hospital Crowded.** The Veteran's Hospital, No. 85, at Walla Walla, has patients within three of its capacity of 228. This is the only tuberculosis hospital in that district. The original plan called for the installation of 328 beds and it is proposed to increase the institution to this limit.

**Dormitory to be Erected.** The county commissioners of Pierce county have ordered plans for the construction of an employes' dormitory at Mountain View Sanatorium, the county tuberculosis institution. It will cost about \$28,000, and will include boiler room and laundry. The capacity of the institution will be increased 15 beds.

**Quarantine against Rabies.** The appearance of rabies in Douglas county has resulted in the quarantine in this county against rabies. It is ordered that all dogs be restrained from running at large unless muzzled.

**Jury Decides Cause of Death.** Last month a protracted and heated suit occurred in the Superior Court at Seattle, regarding the payment of an accident policy after the death of Dr. F. A. Mattice. The consensus of opinion considered the cause of death as suicide. The jury, however, gave a verdict of accidental death, carrying with it a payment of \$30,000 accident insurance.

**Annual Dinner of Medical Society.** King County Medical Society held its annual dinner at Seattle March 4. It was one of the largest attended meetings in the history of the society. The guest of the evening was Dr. Edgar L. Gilcreest, from the faculty of the medical department of the University of California. He read an interesting paper on the life of the late Sir William Osler.

**Date for Association Meeting.** The trustees of Washington State Medical Association held its quarterly meeting at Spokane March 1, attended by representatives from both sides of the mountains. The date for the annual meeting at Seattle was set for September 17-19.

**Arrests for Law Violation.** According to the report from the State Department of Licenses during the past year, 51 practitioners were arrested for violation of medical, dental and drugless healer laws. A conviction was secured in every case except one.

**Commissioned in Medical Reserve.** Dr. Joseph Aspray, of Spokane, has been commissioned major in the United States Army medical reserve corps. While serving overseas he was promoted to the grade of captain.

**Elected to School Board.** Dr. C. W. Sharples, of Seattle, was reelected last month as a member of the school board, receiving the highest number of votes cast for any candidate in that election. During his term of service the past three years the doctor has performed important and notable service in the interest of the schools of his city.

**Dr. John B. Manning**, who practiced for a long period in Seattle, and who has been East for several years, has located for practice at Santa Barbara, Calif., where he has established a convalescent hospital for children.

**Elected President of Staff.** Dr. W. F. West, of Everett, was elected president of the staff of the Everett General Hospital. The institution has been open for one year, and thus far has had a successful and noteworthy existence.

**Promoted in Rank.** Dr. W. D. Kirkpatrick, of Bellingham, has been promoted to the rank of colonel

in the Medical Officers' Reserve Corps. During the war he served with the Red Cross in Serbia, Roumania, Russia and France.

**Appointed Coroner.** Dr. E. P. Perry, of South Tacoma, has been appointed coroner for Pierce County by the Board of County Commissioners. He succeeds Dr. F. J. Stewart, who died recently after a brief illness.

**Elected Chairman.** Dr. X. L. Anthony, of Spokane, has been elected chairman of the state committee of the Young Men's Christian Association. This is an important and responsible office in the state organization.

**Dr. E. P. Fick,** of Seattle, sailed last month for a European trip of several months' duration. He will visit Italy, medical centers in Germany and the Finsen Clinic in Copenhagen.

**Dr. C. D. Carter,** who has practiced during the past year at Long View, has left for Los Angeles, Calif., where he will be with a hospital in that city.

**Dr. J. T. Whitty,** of Seattle, was last month elected President of the Seattle Urologic Society.

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#### IDAHO

**The Eugenics Bill.** This bill, which passed the Legislature and has been signed by the Governor, may become of great importance, if executed in accordance with its provisions. It provides for a board composed of the warden of the penitentiary, director of public health, superintendents of the two hospitals for the insane and the home for the feeble-minded. It provides for the sterilization of the feeble-minded, insane, epileptic, habitual criminals, moral degenerates and sex perverts. It is an encouraging sign of public education that a body of legislators was minded to receive discussion on this subject and approved it so generally, as was indicated by the senate vote of 33 in favor to 7 opposed. Idaho would be a model state if it could thus prevent reproduction of the above enumerated objectionables.

**County to Take Over Hospital.** The county commissioners have been requested to take over the hospital at Gooding, by the board of the institution. The county was asked to take possession for ten years and pay \$2000 a year for its use. The value of the hospital property is placed at \$20,000.

**Appointed to a Position in the East.** Dr. G. H. Caldwell, who has practiced for fifteen years at Twin Falls, has been appointed supervisor of correspondence for the Upjohn Manufacturing Company at Kalamazoo, Mich.

**Appointed County Physician.** Dr. J. E. Langenwaller, of Twin Falls, has been appointed by the county commissioners as county physician. He succeeds Dr. C. D. Weaver, who has served in this capacity for two years.

**Receives Naval Appointment.** Dr. C. H. Gavin, of Idaho Falls, has been appointed assistant surgeon, with rank of lieutenant, in the medical corps of the United States Navy.

**Dr. T. E. Evans,** who has practiced for a number of years at Mountain Home, has located for practice at Nampa.

**Dr. C. S. Rich,** of Burley, will leave that city to take charge of the management of the Lava Hot Springs Sanitarium, which is in the process of completion.

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#### MONTANA

**Deer Lodge County Medical Society** held a meeting at Anaconda, March 21. Forty-two physicians were present from cities in that locality. The guest of the evening was Dr. A. J. Carlson, Professor of Physiology of the University of Chicago. He was en route to Portland to deliver the N. W. Jones Memorial lecture. He addressed the society on "The Newer Developments of Physiology and Medicine."

**Aged Physician in Practice.** Dr. O. B. Whitford, 90 years of age, came to Montana in 1864 and has resided there ever since, with the exception of two years spent in Oregon. He graduated from the Eclectic Medical Institute of Ohio. Recently he has opened an office in Butte, where he expects to resume practice.

**County Tuberculosis Nurse Engaged.** The State Board of Health will assist Cascade county in the movement for a tuberculosis nurse for a period of three months. The receipts from Christmas seals in that county were insufficient to pay a year's salary.

**Measles Not to be Placarded.** The health officer of Great Falls has announced that German measles are no longer to be placarded. These cases are so numerous and of so mild a character that its control by the health department has not been possible.

**Dr. G. J. Hanley** has located for practice at Jordan. After hospital service in Brooklyn, New York, he lived in St. Paul, Minnesota, and during the past eight years has practiced in Montana.

**Dr. J. H. Harris,** formerly of Oklahoma City, Okla., has located for practice at Great Falls.

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#### OBITUARIES

**Dr. L. L. Jackson,** of Bellingham Wash., died March 8 as a result of cerebral hemorrhage at the age of 60 years. He was a graduate of the Medical Department of the University of Tennessee. He located at Edison in 1889. A few years later he moved to La Conner, where he lived for six years and again returned to Edison. About five years ago he moved to Bellingham, where he lived retired from the practice of medicine.

**Dr. Felix J. Stewart,** of Tacoma, Wn., died March 5, from cerebral hemorrhage. He was 66 years of age. He graduated from Chicago Medical College in 1885. He had practiced in Tacoma for the past twenty-nine years. He was serving his second term as coroner. He was one of the most widely known physicians in Pierce County and held in high esteem for his many estimable qualities.

**Dr. J. C. House,** of Port Townsend, Wash., died March 23, at the age of 73 years. He was one of the veteran physicians of that city, and was widely known in that section of the state.

**Dr. Byron E. Miller,** of Portland, Ore., died Feb. 25, from disease of the heart. He was 69 years of age, and had practiced in Portland for forty years.

## REPORTS OF SOCIETY MEETINGS

### OREGON

#### CENTRAL OREGON MEDICAL SOCIETY

Pres., J. C. Vandervert; Sec'y, R. N. Hendershott

The bi-monthly meeting of Central Oregon Medical Society was held at Bend, March 8. Addresses were made by Drs. E. B. Daniel and R. A. Fenton of Portland, R. A. Wiswald of Vancouver and Frank Ward, of Portland. Secretary of the Public Health League, Drs. J. H. Rosenberg, of Primevale, member of the State Board of Health, and David Baird, of Redmond, were also present. The treatment of goiter in school children was the special subject of discussion.

#### LANE COUNTY MEDICAL SOCIETY

Pres., N. G. Nelson; Secty., L. S. Kent

The Lane County Medical Society held its monthly meeting at Eugene, March 19. Twenty-five members were in attendance.

The program consisted of an address on Gynecology by Dr. R. E. Watkins, of Portland. Dr. George E. Hurley, of Eugene, reported on a number of cases of goiter.

### WASHINGTON

#### CLALLAM COUNTY MEDICAL SOCIETY

Pres., P. D. Moore; Sec'y, W. H. Taylor

The annual meeting of the Clallam County Medical Society was held at Port Angeles Feb. 17. The following officers were elected for the ensuing year: President, Dr. F. T. Hyde; vice-president, Dr. Donald Black, Port Angeles; secretary-treasurer, Dr. W. H. Taylor, Port Angeles; delegate to meeting of State Association, Dr. P. D. Moore, Sequim. alternate, Dr. Hay.

#### KING COUNTY MEDICAL SOCIETY

Pres., A. C. Crookall; Sec'y, C. E. Watts

The surgical section of King County Medical Society, Seattle, Wash., was called to order by Chairman R. D. Forbes, March 9, 1925. Thirty-five were present.

#### PROGRAM

Dr. H. J. Whitacre, of Tacoma, read a paper, illustrated with cuts and lantern slides, on "Chronic Duodenal Obstruction." (Northwest Medicine, Vol. XXIV, No. 3, March, 1925.)

In discussion Dr. Wheelon spoke of the function of the duodenum, also symptoms and clinical findings of chronic duodenal obstruction and the etiologic factors.

Dr. George Miller discussed the pathology in the upper right abdominal quadrant and the advisability of examining patients under x-ray at the end of twenty-four hours both recumbent and standing.

Dr. H. J. Davidson mentioned the type of people in which one may expect to find this condition and of the action of barium in the duodenum in some cases.

Dr. A. B. Hepler read a paper, illustrated with lantern slides, on "Abnormally Movable Kidney." There

are three types of cases: (1) Those which give no symptoms, (2) those which are shaded with general ptosis and in which the kidneys are generally implicated, (3) those in which the symptoms are generally related to the kidney. It is more common in women than in men and on the right side than on the left. It may be caused by the trauma of everyday life.

The most common symptoms are (1) pain, (2) gastrointestinal symptoms, (3) nervous symptoms. In nearly all these cases pain can be reproduced by dilation of the renal pelvis which forms an important diagnostic point. Most of the gastro-intestinal symptoms follow a right-sided ptosis of the kidney. The diagnosis is made on (1) palpitation, (2) x-ray, (3) symptoms, (4) reproduction of the pain. Treatment depends on the class in which they come. Many abnormally movable kidneys may give no symptoms.

In discussion Dr. Nelson said it is not the mobility but lack of drainage that causes the symptoms. Dilation occurs below as well as above the obstruction.

Dr. Peacock mentioned that some cases of intermittent orthostatic albuminuria with dull pain or colic often have ptosis of the kidney and nephropexy relieves some of them.

Dr. Rohrer spoke of the differential diagnosis of nephroptosis and abdominal conditions which may be obscure. He mentioned that negative urine should not be given much weight in diagnosis.

Application for membership was presented of Dr. Ralph Shirey.

#### PIERCE COUNTY MEDICAL SOCIETY

Pres., W. B. McCreery; Secty., W. B. Penney

The regular meeting of the Pierce County Medical Society was held in its rooms, Tacoma, Wash., March 10. Dr. McCreery in the chair. Minutes of the previous meeting read and approved.

Application of Dr. G. A. Gianelli read and referred to the Trustees.

#### PROGRAM

The paper of the evening was given by Dr. W. W. Mattson, who presented many clinical cases with remarks on some interesting manifestations of lues.

The following report was received from Dr. E. F. Dodds, Chairman of the Program Committee, in regard to the annual banquet:

Hotel took in in cash.....	\$ 240.00	
88 plates at \$2.00.....	\$176.00	
Tip .....	10.00	
Cigarettes .....	4.00	290.00

We received—		
90 tickets at \$3.00.....	\$237.00	
6 got away with \$2.00.....	12.00	249.00

Expense, Speaker .....	\$ 20.00	
Music .....	30.00	50.00
Cash .....	9.00	

Check for balance enclosed.....\$ 9.00

The following resolution was presented and adopted unanimously by the society:

Again one of our highly esteemed members has completed his course and has gone to his eternal reward. Last Friday evening, on the 6th day of

March, 1925, Dr. Felix J. Stewart died in a peaceful unconsciousness, with which he was stricken only a brief day and a half before the end came. His later years had been spent, with the exception of brief periods, in comparative physical comfort and in the full performance of his duties, but certain signs had warned him that when the end should come it would come suddenly.

Dr. Stewart was born in 1858 and was graduated from the Chicago Medical College in 1885. He has lived in Tacoma for the last 28 years, and at the time of his death was probably the most widely known physician in Pierce County. His fine Christian character, his amiable nature and his absolute integrity had placed his services in demand in many positions of trust, and he occupied at the time of his death the position of Pierce County Coroner, and state medical director for the Modern Woodman of America and also a member of the United States Pension Board. He was a member of the American Medical Association, the Washington State Medical Society and the Pierce County Medical Society.

WHEREAS, Dr. F. J. Stewart was universally loved and respected by his fellow physicians, be it

RESOLVED, by the Pierce County Medical Society in regular session this 10th day of March, 1925, that we hereby officially express our sorrow and regret at the death of our friend and co-worker and that we extend to his bereaved family our deepest sympathy. May the knowledge that we are all your friends as we were his, and the memory of his fine life be a lasting comfort to you. Be it further

RESOLVED, that this resolution be spread upon the records of the society and that a copy be sent to the family of the deceased.

(Signed) Evan Hyslin, Chairman.

#### SNOHOMISH COUNTY MEDICAL SOCIETY

Pres., C. L. Hoffler; Sec'y, J. F. Beatty

A meeting of the Snohomish County Medical Society was held at Everett March 3.

The program consisted of the following papers: "Indications for Forceps," Dr. Charlton Jay; "Caesarian Operation," Dr. I. W. Parsons.

#### WHITMAN COUNTY MEDICAL SOCIETY

Pres., L. G. Kimzey; Sect'y., Frank St. Sure

A regular meeting of Whitman County Medical Society was held at Colfax, March 23.

This was the first meeting of the year. Attention was called to the fact that the present membership is the largest in the history of the society. Last year the meetings were attended by about 85 per cent of the membership.

The program consisted of a paper by Dr. M. D. McIntyre, of St. John, "A Report on Several Interesting Cases." Drs. Paul G. Weisman and Frank St. Sure gave reports of recent postgraduate trips to the East. Dr. R. J. Skaife discussed a radio-broadcasting program for the near future.

#### PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

Pres., J. T. Dowling; Secty., M. J. Morris

The Puget Sound Academy of Ophthalmology and

Oto-Laryngology held its regular monthly meeting at the Virginia Mason Hospital, Seattle, Wash., March 17, at 8 p. m., Dr. J. S. Davies, president, presiding. The minutes of the last meeting were read and approved.

Dr. C. J. Shannon presented a clinical case of carcinoma of the left antrum which was discussed by Drs. Greenstreet, Bell and Cameron.

Dr. J. H. Harter reported progress of a clinical case he presented at the November meeting. It was a girl who had inflamed nodules along the soft palate which resisted local treatment, diagnosed at that time as Vincent's angina, despite negative laboratory findings. These have all disappeared after a few injections of sulpharsphenamine.

The scientific paper of the evening was read by Dr. J. H. Harter on "Zinc Ionization in Treatment of Otitis Media with Case Reports." He described the method and how it is used in treatment. Ten treatments are given at intervals of five or six days. If not cured by this time the treatment is discontinued. Results are better if a large central perforation is present. Twenty cases with cures in 4.4 per cent were reported. Zinc ionization should be used as a therapeutic adjunct in all cases of chronic or subacute suppurative otitis media which have resisted the usual methods of treatment.

The paper was discussed by Drs. Cameron, Davies, Chase, Greenstreet, W. O. Bell, Shannon, Waltz, Dowling.

Applications for membership of Drs. Francis Brugman and A. W. Howe were presented.

## PUBLIC HEALTH LEAGUES

### WASHINGTON

The Public Health League of Washington is beginning a state-wide campaign to increase the lay circulation of the Messenger, the publicity medium of the organization, a journal of health issued quarterly. This publication is sent not only to physicians and dentists and others affiliated with the League, and to the lay membership, but more than 1000 copies each issue are mailed to members of the legislature, newspaper editors and to prominent leaders of the state. The Messenger is a means of connecting the League educational drive with its legislative responsibility.

### A PROBLEM OF EDUCATION

The problem of scientific medicine today is a problem of education. It is a problem of reaching the public with authoritative and scientific information on health topics. There is much to be done to arouse the public mind to the proper appreciation of the full utility of medical science. The story of this science is one of the great romances of life; it is the story that reaches all of those issues of life and death, and for that health hunger there is needed continual publicity and educational data that the public may be able to understand.

The Public Health League Messenger tells this story in terms of the health problems of the state.

The campaign now under way should give this publication a circulation that will make it a more powerful force in moulding public opinion along these lines. The lay publication of the American Medical Association, *Hygeia*, is filling the important place in a national educational manner and the Washington League officials continue to aid in getting it into the Washington field.

#### THE NEXT LEGISLATURE

Several proposals were made at the short session of the Washington legislature which adjourned February 14 by anti-health forces, looking to further recognition of cultism in the state. One of these would give certain legal recognition to a new cult from the Abrams electronic school. Apparently this healing aggregation would be given exclusive rights to use the Abrams machine and the members of the cult would be "graduates" of the Abrams school of electronic reactions.

Another proposition which had some support in lobby discussion at Olympia, was one which would require free treatment by physicians for venereal diseases, when any such case had been referred by a "lay" board in the county.

Surgical fees would be greatly limited if the measure drawn up for one of the state senators is introduced and passed at the next session. This measure would present a definite schedule of fees that can be charged for any surgical operation. It is understood that the fees to be granted under this proposed act run about twenty-five per cent of those generally charged at this time.

#### CONTINUED VIGILANCE

The Public Health League will offer some constructive measures at the November session. The building of a wall against those who are incompetent to diagnose and treat disease, through an adequate educational test, is one of the tasks before the health forces of the state. Then the defeat of such destructive issues as noted above means that there is need of continued vigilance if we are to move upward in standards and healing methods in Washington.

#### IDAHO

##### MEDICAL MATTERS BEFORE IDAHO LEGISLATURE

The eighteenth session of the Idaho Legislature was a very trying one for the medical men of Idaho. In the early part of the session the osteopaths introduced their so-called Model Practice Act, which would have given them, if passed, the right to prescribe certain drugs with full power to do surgery in all of its forms. It would have also given them admittance to all hospitals, both private and public.

This bill was not an act to regulate the practice of osteopathy, but an act to amend the Medical Practice Act of Idaho, so as to provide an additional way to qualify as physicians and surgeons. In those states where osteopaths have procured recognition, they have done so on the representation that they desire to practice something different from medicine. They have tried that method of practice, and apparently it has proven a failure; for, having begun

on the supposition that all manner of disease and injury could be cured by them **without the use of drugs and a knife**, they now seek the right to use both.

This bill, if passed, would have conferred on the so-called osteopathic physician and surgeon rights not granted to real physicians and surgeons, or any other class of healers. Section 16 of the bill tried to confer on all physicians and surgeons, so-called, the right to place and keep their patients in hospitals maintained and constructed by public taxes or by public subscriptions. But the question was asked if the Legislature is going to open up the hospitals to one class of licensed healers, why not open them up to all? Why not say, no hospital maintained and constructed by public taxes or by public subscriptions shall refuse to receive and care for any patient brought to the institution by any licensed practitioner of medicine or any licensed healer?

If the osteopaths had come before the Legislature, asking that they be authorized to practice surgery and to use all kinds of drugs, they would have received very little consideration. But the stress laid on surgery in this bill was merely camouflage to cover the retreat of the osteopaths from the position, in which they claim that drugs were of no use, but to authorize them to use practically all drugs without specifically disclosing that fact in the bill. To conceal the true purpose of the bill, training in surgery was exaggerated. But they stated in Section 16 that they shall have the same "rights as physicians and surgeons of other schools." Therefore, the so-called osteopathic physician and surgeon was legislating to do everything that a real physician and surgeon was entitled to do.

A swarm of lobbyists and osteopaths were on the ground in their endeavor to put this measure across. When the bill was first introduced, it secured a great deal of support from the legislators, but after certain provisions were explained to them, the tide turned against them. On a vote to table the proponents won by a vote of 35 to 25. Immediately after a motion carried to send it to the Committee of the Whole for amendment. The bill was amended in the Committee of the Whole, requiring all osteopaths to be graduates of high schools, have a two-year pre-medical course, four-year osteopathic course and one-year internship. The bill was also amended by striking out the clause, wherein certain stipulated hours could be reduced 30 per cent. After the bill was amended to a considerable extent, a motion was made that it be reported back to the House of Representatives with the recommendation that it be indefinitely postponed. This motion prevailed on roll call by a vote of 34 to 23.

When this bill was defeated, another one was introduced, amending the present law to read that osteopathy in the state of Idaho should mean those things as taught in osteopathic schools. This would have thrown the doors wide open, and would have given the osteopathic schools and the American Osteopathic Association the right to dictate what should constitute the practice of osteopathy in the

state of Idaho. Due to the fact that several defense measures were introduced, the author of this bill withdrew the same, thus ending for this session the menace of lowering the public health standards of this state.

House Bill No. 32 was introduced by Atkins, of Ada County, and had for its purpose the licensing of corn doctors. The bill as originally introduced provided for a Board of Chiropody. This was amended in the House of Representatives by placing the licensing of these people under the jurisdiction of the Board of Medical Examiners. It was amended in the Senate by providing that their practice should be limited to the surface of the human foot, and that no incision or injection could be made below the true skin. The bill, as amended, was not opposed by the League for the reason that it was thought best that these people should be licensed because of the Supreme Court decision, which said that their practice could not be prohibited. By the passage of this law, the laws pertaining to the healing arts in the state of Idaho are considerably strengthened.

House Bill No. 86, otherwise known as the Tuberculosis Hospital Bill, passed both houses. This bill provided for the reappropriating of \$140,000 for the erection of a tuberculosis hospital, the site to be selected by a commission headed by the Governor. This bill was vetoed by Governor Moore. His reason for disapproving of the bill was that it is not in line with the economy program, and he did not think it wise to establish another institution at this time.

House Bill No. 191 was introduced by the Medicine and Surgery Committee and limited chiropractors to massage and use of the hands only. This bill was withdrawn by the committee.

Senate Bill No. 158 was introduced by the State Affairs Committee, and changed the personnel of the Medical Board by amending the law to read that six members of the medical profession who had been in active practice for a period of ten years prior to their appointment should be eligible. The old law stipulated that six members should be appointed from three different schools, representing allopathy, homeopathy and eclectic. This bill was passed, but has not yet been signed by the Governor.

House Bill No. 203, known as the Sterilization Bill, passed both houses of the Legislature and is now a law, as it has been signed by the Governor.

House Bill No. 238 was introduced by the Medicine and Surgery Committee in the House, and, had it passed, would have provided for the consolidation of several counties into a health district, enabling them to secure a full-time health officer. The provision was also made that in the event it was not deemed advisable for a county to be included in a district, it could continue under the present plan of a part-time health officer. This bill caused considerable discussion, and was finally postponed by a vote of 45 to 14.

Senate Bill No. 159 was introduced by the State Affairs Committee at the request of the Industrial Accident Board. It amended practically every section of the Workmen's Compensation Law. Section

16 of this bill stated that all physicians, surgeons and hospitals should submit to a schedule of fees and render reports at any and all times called for by the Industrial Accident Board. Under this section there would have been no appeal from the decision of the Board, as their word would have been final. The bill also provided that, where a physician and surgeon failed or neglected to send in reports, when requested by the Industrial Accident Board, they would be subject to a fine of \$300. This bill was actively sponsored by the Industrial Accident Board and caused some very bitter feeling. Several attempts were made to effect a compromise to have Section 16 stricken, but the members of the Industrial Accident Board replied that of the twenty-four pages of this bill, they wanted Section 16 or nothing. This bill passed the Senate by a vote of 31 to 9, but failed to reach a vote in the House in the closing hours.

The bill was considered one of the most autocratic and socialistic ever introduced into the Legislature. The physicians and surgeons of the state resented the fact that such a bill should be introduced, and every man in the state who had the matter called to his attention, immediately conveyed to the members and their committee their feeling. This accounted for the defeat of the measure, as some terrific pressure was brought to bear to have the bill passed. It was considered one of the most drastic state medicine measures introduced in any Legislature, and would have made the Industrial Accident Board all supreme in matters affecting industrial accident cases.

The Idaho physicians have a very effective organization. It was not necessary for a single man to make the trip to the Capitol City during any stage of the Legislature. The physicians of the state were sent bulletins bearing on the legislative situation every few days, and in this manner were kept fully advised of developments from day to day.

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#### The Blood Count in Carcinoma of the Esophagus.

In fifteen cases of squamous cell carcinoma of the esophagus examined by A. M. Master, New York (Journal A. M. A., March 7, 1925), it will be seen that the average blood count was 93 per cent hemoglobin; 5,040,000 red blood cells; color index, 0.94; 9,900 white blood cells; 72 cent polymorphonuclears; 23 per cent lymphocytes, and 5 monocytes. The cases cited were strictly carcinoma of the esophagus and did not involve the cardia. The pathologic reports were squamous cell carcinoma apparently. A high hemoglobin and erythrocyte count, a color index of nearly 1, and a slight leukocytosis are the usual findings. In other words, the normal or high blood count in a neoplasm of the esophagus is the same as in a cardiospasm of functional or inflammatory origin. A normal blood count therefore does not rule out a new growth of the esophagus. In carcinoma of the stomach, a moderate to severe secondary anemia is found. In twenty-six cases of stomach cancer, the average count was 58 per cent hemoglobin, 3,370,000 red blood cells, color index 0.8, 11,300 white blood cells, 76 per cent polymorphonuclears, 21 per cent lymphocytes and 3 per cent monocytes.

## BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

**Essays and Addresses on Digestive and Nervous Diseases, and on Addison's Anemia and Asthma.** By Arthur F. Hurst, M. A., M. D. Oxon., F. R. C. P. Physician, Neurologist and Director of Advanced Studies, Guy's Hospital, London. Cloth, 299 pp. \$6.00. 1924. Paul B. Hoeber, Inc., New York.

The distinguished author in rather an amusing preface relates how, when asked for reprints of his papers, they always seem out of date to him, and when recently he remonstrated at an antiquated treatment the physician responsible said he was following out meticulously the author's directions. The author replied that his article was written long ago, nearly a year, and so hopelessly out of date. We are told that the present volume represents the very latest ideas of the writer, "though, perhaps, I shall regard them as already out of date by the time they appear."

The article on cholecystitis and gallstones is quite modern and filled with much food for thought. With one statement the reviewer is in complete accord, as developed in a recent number of this journal. "I should like to add that if a definite diagnosis of gallbladder disease has been made, the gallbladder should be removed, even if its external appearance is healthy, unless some other condition is found at operation which adequately explains the condition." An assertion almost identical with that in the reviewer's paper of four years ago. Also another point, that magnesium sulphate acts as well when given by the mouth to increase the flow of bile as by the elaborate and unpleasant Lyon method with duodenal tube.

There is still the latest and most efficient special method of diagnosis of gallbladder disease that Hurst does not mention, and that is the intravenous injection of tetrabromphenolphthalein, after Graham and Cole, which would appropriately cause his book to fall into the category that the author predicts in his preface—of medical literature out of date. But nevertheless this work was well up to date when it was written, and will be found very practical, interesting and productive of thought, as the author is an unusually able and experienced man. The only pity about such books is that they are so costly as to militate against their popularity. This applies to all books now and tends to limit medical buying to the more conventional textbooks.

WINSLOW.

**Serum Diagnosis of Syphilis by Precipitation.** Governing Principles, Procedure and Clinical Application of the Kahn Precipitation Test. By R. L. Kahn, M. S., D. Sc. Immunologist, Bureau of Laboratories, Michigan Department of Health. Williams & Wilkins Co. Baltimore. 1925.

It now seems a well-established fact that the results obtained with the precipitation test for syphilis closely parallel those of the Wassermann test. The author discusses in detail the various phases of the test and offers several important improvements, all based upon exhaustive experimental work. The

main features of his modification are: (1) The preparation of the antigen and the antigen dilution in such a way that a more unstable precipitate is formed. This gives more sensitive and specific reactions. (2) The concentration of reagents. The reaction takes place in a short period of time, thereby avoiding interference by bacterial growth which is apt to take place during the longer incubation periods. (3) The use of three tubes with varying serum-antigen proportions. Sera from different conditions of syphilis have different antigen requirements. The proportions of 3:1, 6:1 and 12:1 were adopted as experiments carried out and indicated that these best meet such requirements. While the test probably never will be the equal of the Wassermann as a diagnostic measure, the author's modification has done much toward making it a valuable adjunct as a control test which may in time come into general use.

MAGNUSSEN.

**Radium Report of the Memorial Hospital, New York.** Second Series, 1923. 293 pages. \$5.00. Paul B. Hoeber, Inc., New York. 1924.

Interest in the cancer problem both on the part of the profession and the public at large has been increasing in the last few years, due undoubtedly in no small degree to the hope held out of better results from the use of radiation. It is gratifying, therefore, to have so comprehensive a report as the present one from an institution of this character. All have been waiting anxiously for detailed reports, giving the actual results of radio therapy carried out under the careful supervision of such men as the authors.

The present report consists of nineteen chapters, covering practically the whole field under consideration. It presents in detail the technical side of the use of both radium and x-rays, together with statistical accounts of the results obtained. They are scientific throughout and give impartially the arguments both for and against the use of radiation. The conclusions are conservatively drawn and when analyzed give good ground for the belief that marked advances have been made in the past few years in the treatment of malignancies. They also offer decided hope for further advance in the future. The report cannot fail to be of great interest to all members of the profession and especially to those who are engaged in the special work of radiotherapy.

BOURNS.

**Lectures on Pathology.** By Ludwig Aschoff, M. D., Professor of Pathologic Anatomy, University of Freiburg, German. With 35 illustrations. 365 pp. \$5.00. Paul B. Hoeber, Inc., New York. 1924.

In each lecture a different subject is covered. It is much to the credit of the author, and adds to the interest of the reader that every subject is one in which there is either dispute as to the pathology involved, much obscurity as to nomenclature or some similar feature. On each subject, Aschoff presents a distinct systematization and, while the disputes and divergences of opinion presented are so marked that

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any reader here and there find some statement with which he cannot agree, he cannot help but admire the logical and systematic presentation of the matter discussed and the experimental results which give weight to the opinion expressed.

There is another angle from which American pathologists may derive benefit. The lectures contain the latest and most accepted ideas of the German school which, as we know, was more or less largely cut off from communication with the rest of the scientific world. Therefore, the results and opinions stated were arrived at independently from those of American, French or English workers, and where the conclusions agree with those of the latter, we feel much more confidence in the findings; where there is divergence we have new lines of thought on which to proceed.

CEFALU.

**Heredity in Nervous and Mental Disease.** Association for Research in Nervous and Mental Disease. A series of Investigations and Reports. Vol. III. 332 pp., \$3.75. Paul B. Hoeber, Inc., New York. 1925.

This subject was selected for consideration by the association for the year 1923 and this volume contains all the papers presented, together with the direct discussion which followed each paper. The ground was fully covered and many interesting facts brought out. Starting with the chromosomes and their influence on heredity, the work goes on through the pathologic aspects. The underlying inherited constitutional states, upon which neuroses and psychoses develop, the pathology of the hereditary and familial diseases, etc., are given very connectedly. Moreover, an excellent idea is to be obtained of the great advancement that has taken place in knowledge of mental and nervous fundamentals, while the discussions show decided promise of future possibilities in perfecting the theories.

WILT.

**Tumors of the Spinal Cord.** The Symptoms of Irritation and Compression of the Spinal Cord and Nerve Roots. Pathology, Symptomatology, Diagnosis and Treatment. By Charles A. Elsberg, M. D., Professor of Neurological Surgery, Columbia University, etc. With 350 illustrations. 421 pp. \$10.00. Paul B. Hoeber, Inc., New York. 1925.

This volume is well edited and extensively illustrated. The subject matter comprises a report of one hundred tumors of the spinal cord with a review of the literature of this subject. It is divided into seventeen chapters, a complete bibliography, and index of authors and subjects. The first chapter is devoted to historical discussion of the subject; the second to etiology and incidence; the next four to case reports; chapter seven to the mechanical factors and locations of tumors; chapter eight to the cerebrospinal fluid, changes in pressure, the effects of withdrawal, signs and symptoms of compression. Three chapters are devoted to symptomatology, one each to clinical features at the different levels, pathologic anatomy and multiple tumors; the last three chapters to diagnosis, treatment and end results.

The illustrations are exceptionally well executed, there being 354 in all. They consist of operative technique, actual tumor illustrations, charts showing out-

lines of nerve changes, special and pathologic anatomy, microscopic sections and radiograms. The entire subject is well covered and the author has used typical cases to emphasize special observations. He discusses quite frankly the merits of various tests, technic and procedures as to treatment aside from surgical methods.

The volume is one that has been written with a view toward encouraging more study of cord lesions, backache, urinary disturbances and neurologic signs and symptoms by the general practitioner. The author recognizes the fact that to secure good results requires an early diagnosis by the one who sees the cases first—the general practitioner.

SWIFT.

**Principles of Psychotherapy.** By Dr. Pierre Janet, Member of the Institute, Professor of the College of France. Translated by H. M. and E. R. Guthrie. 322 pp. The MacMillan Company, New York, 1924.

The question is propounded, can psychology, which claims to have become more scientific, give us any help in the treatment of certain diseases? The author answers the question in this volume, giving special emphasis to the methods of psychotherapy and their basic principles. The book is divided into three parts, evolution of psychotherapy, principles and the results of psychotherapy. Under the heading of animal magnetism the author discusses some of the cults which have originated in the United States whose soil, he says, seems favorable to the development of cures more magic than scientific. Among them he includes osteopathy and christian science, the latter being considered at some length. He describes methods by which psychotherapy may be rationally employed in the treatment of conditions of disease. One interested in this subject will find this volume well worth reading.

**Modern Methods in the Diagnosis and Treatment of Renal Disease.** By Hugh MacLean, M. D., D. S. C., Professor of Medicine, University of London, etc. Second Edition, Revised and Enlarged with Four Colored Plates. 110 pp. \$2.50. Lea & Febiger, Philadelphia and New York. 1924.

Reading this book stimulates the desire to do more thorough work, and creates admiration for an author who has approached the clinical, technical and practical aspects of a problem in a very broad, and yet intensive manner. To have bound in one small volume the aid to the understanding of faulty nephritic function that this little book gives is distinctly unusual. It deals with facts and their correlation in a very poorly understood field. The clinical discussion of nephritis gives an old symptomatology new life. The discussion of albuminuria gives hope to those who have felt that an albuminuria meant Bright's disease. The importance of blood chemistry is emphasized, and its interpretation and methods made plain. Every aid is described in detail so that its application is simple. For the practitioner who is meeting with nephritic problems, a few hours spent with this book and the application of its principles in his laboratory will give him a new understanding of renal disease.

HOFRICHTER.

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**Diabetes.** A Handbook for Physicians and their patients. By Philip Horowitz, M. D. With Thirty-four Illustrations and Two Colored Plates. Second Edition, Revised and Enlarged. 219 pp. \$2.00. Paul B. Hoeber, Inc., New York. 1924.

The author's theory regarding the etiology of diabetes is of interest and the sharing of this common factor (auto-intoxication) with nephritis and arteriosclerosis emphasizes its importance. The interference of pancreatic function has some etiologic factor which we cannot identify at the present time. If this common factor can be demonstrated to be operating in arteriosclerosis and nephritis, the contribution will be distinct.

Too little space has been devoted to the normal and abnormal metabolism of carbohydrate, protein and fat. A clear discussion of these processes would eliminate the necessity of frequent dietary charts. No mention is made of blood-sugar studies other than single determinations. In the differential diagnosis attention should be called to the response obtained in the blood stream to the administration of one hundred grams of glucose. The case histories are numerous and serve to illustrate the successful management of the disease. Anyone interested in the management of cases of diabetes mellitus will find much valuable aid in this book.

HOFRICHTER.

**A Text-Book of Practical Therapeutics.** With Especial Reference to the Application of Remedial Measures to Disease and their Employment upon a Rational Basis. By Hobart Amory Hare, B. Sc., M. D., LL. D., Professor of Therapeutics, Materia Medica and Diagnosis in the Jefferson Medical College of Philadelphia, etc. Nineteenth Edition. Enlarged, Thoroughly Revised and Largely Rewritten. Illustrated with 144 Engravings and 8 Plates. 1061

pp. \$7.00. Lea & Febiger. Philadelphia and New York, 1925.

There must be a demand for any book which appears in its nineteenth edition. In this volume the author calls attention to the changes in the drugs presented for consideration. Old drugs, unused at present, have been eliminated and many new ones have been introduced. It is stated that in "none of the preceding editions have so many alterations and additions been made, partly because advances in rational therapy have been remarkably great since the eighteenth edition appeared." Thus, insulin, which in a sense is a change in the therapy in diabetes, is discussed, as also the newer preparations of arsphenamine. It is unnecessary to consider in detail a volume so well known to all physicians as this. The greater part of the book is devoted to the consideration of individual drugs and the latter part to diseases, with suggestions as to their treatment.

**The Surgical Clinics of North America.** (Issued serially, one number every other month). Volume IV, Number VI (Clinic of Frank H. Lahey, M. D., Boston, Mass. December, 1924), 166 pages with 43 illustrations, and complete index to Volume IV. Per clinic year (February, 1924 to December, 1924). Paper, \$12.00; Cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company.

This volume, being devoted to a single clinic, presents a number of reports from Lahey who is at its head. Four of these deal with various aspects of the goiter problem. Two others describe intestinal fistulae. Green, Dunphy, Hamilton and Clute also present cases bearing in one way and another on thyroid abnormalities. This volume will, therefore, especially interest those practitioners who have a leaning toward goiter surgery.

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## ORIGINAL CONTRIBUTIONS

### A TECHNIC FOR SIMULTANEOUS IMPLANTATION OF THE RIGHT AND LEFT URETERS INTO THE PELVIC COLON WHICH DOES NOT OBSTRUCT THE URETERS OR DISTURB KIDNEY FUNCTION

ROBERT C. COFFEY, M.D.  
PORTLAND, ORE.

No more forlorn chapter in surgical literature has been written than the one dealing with the treatment of malignant tumors of the bladder. Radical surgery is our only hope for accomplishing much in the way of cure. Diversion of kidney function is the only way of giving temporary relief to incurable cases.

Geraghty, in Cabot's "Modern Urology," Vol. II, page 242, says, "The most radical method of treating bladder tumors is by complete extirpation of the bladder. This operation was first introduced by Bardenheuer in 1887, and while technically relatively simple, it has not met with general favor on account of the pitiable condition in which it usually leaves the patient. Since Bardenheuer described his technic until the present time, most modifications of the operation have related to the treatment of the ureter."

Going still further than Geraghty, we may say that the fundamental procedure upon which all

surgery for malignant growths of the bladder must rest entirely is the successful disposition of the ureter. This I feel we can now accomplish. The present article sets forth the last link in the perfection of this procedure.

In a meeting of the Southern Surgical Association at Hot Springs, Virginia, in December, 1909, I presented a method of removal of the head of the pancreas experimentally, in which it was necessary to first transplant the bile duct and showed that a bile duct transplanted directly into the intestine always dilated. If the bile duct were made to run beneath the mucous membrane for some distance before entering the lumen of the intestine it would not dilate. The conclusion was that intra-intestinal pressure brought to bear in the end of the open duct caused the dilatation in the one instance, while the same force brought to bear on the side of the duct prevented the dilatation of the duct in the other. At this meeting I suggested that the same principle would probably prevent the dilatation of the ureter and ascending infection of the kidney in case of transplantation of the ureter.

In June, 1910, I was able to present to the Surgical Section of the American Medical Association meeting at St. Louis five kidneys and ureters, in which the ureter had been implanted into the intestine for a length of time varying from six weeks to 167 days. No injury had been done to the kidney and no dilatation of the duct had taken place. Dr. Charles H. Mayo, who was chairman

of the section, by way of inviting discussion on the paper, referred to it as "an epoch-making paper." Nevertheless it has been difficult to convince the profession that my first object was to bring out a principle rather than a bit of technic in surgery.

Immediately after the St. Louis meeting, Dr. Mayo had the opportunity to use the principle on a patient and since that time he has used it a great many times. Dr. Mayo has done by far the greatest amount of the clinical work in this connection and his reports have been among the most remarkable that have ever been shown in connection with the subject of urology. In the *Journal of American Medical Association*, Volume 82, Number 8, page 624, he and Walters report on end results in 35 cases, in which they had transplanted the ureters for extrophy of the bladder operated on between 1912 and 1921, and say: "All of the patients from whom letters have been received say they have enjoyed living since the operation, which diverted their urine from their clothing to the rectum, and that they have been able to carry on comfortably their various duties in life."

My first clinical case treated by this method, followed Dr. Mayo's first two cases. My subsequent results by the original method, which in most essentials is the same as the one used by Dr. Mayo, have been equally good, but it is an outstanding fact that neither Dr. Mayo nor myself nor any other surgeon has reported the extensive application of this principle to the treatment of cancer of the bladder. This has been very discouraging for here is where I expected to find the greatest use for the principle. Why has it been disappointing in these cases?

In the first place, I discovered experimentally that both ureters could not be transplanted at the same time, for the reason that there seemed to be a postoperative edema in the intestinal wall which was sufficient to obstruct the lumen of the ureter and thus temporarily destroy kidney function. Animals in which both ureters were transplanted died. When one ureter was transplanted, the urine would not come into the intestine for three to seven or eight days and then the kidney would begin to function in a normal way. This same thing was, of course, true in dealing with the human. It has been found necessary to permit the first kidney to have sufficient time to recover its function before the second ureter is transplanted.

Removal of the bladder has been a third operation. Patients of the cancer age usually have a

diminished kidney function and diminished resistance in other respects. Therefore, the ordeal of three operations has seemed so formidable that few have had the temerity to use it in cancer. Another drawback has been that the ureters are frequently dilated from back pressure, when the patient comes to the surgeon. Dr. Mayo has recommended that the ureters thus dilated should not be transplanted into the intestine.

On January 27, 1925, I was holding a clinic for the Northwest Section of the American College of Surgeons. Dr. Crile, of Cleveland, and other distinguished surgeons were present. One of my cases was a cancer of the bladder, for which we were to do a transplantation of one ureter as the first stage of the operation. On opening the abdomen, to my great dismay, I found the ureter dilated to the size of a man's finger. The wound was closed and no operation performed.

About March 30, a patient was referred to me with a hopeless cancer of the bladder and the vesicovaginal septum. The patient had a great deal of distress and a very foul bladder. She presented a picture of despair. I told the family that the only thing that could be done was to transplant the ureters, after which we might use large doses of radium. To this they consented and on April 4 I opened the abdomen with the view of transplanting the right ureter. I found it dilated to the size of my little finger. I then enlarged the incision and inspected the ureter on the left side and found it also dilated. The operation was being performed in the presence of a senior class of medical students and in discussing it I happened to think of severing the ureter, putting a tube well up into the ureter and sewing and tying the tube to the ureter, after which the tube could be brought out through a stab wound in the intestine and through the anus, and the end of the proximal segment of the ureter implanted submucously in the wall of the bowel in the same way as if no tube had been used. This was done. The patient was not inconvenienced at all by the operation more than is experienced in any other abdominal operation. The kidney never ceased to function for a moment, in fact was discharging urine through the tube during the operation and afterward. About seven days after operation, the tube came away and ureter discharged the urine into the intestine in a normal way.

On April 18 we opened the abdomen on the left side and transplanted the left ureter in the same manner. This kidney also began to act at once

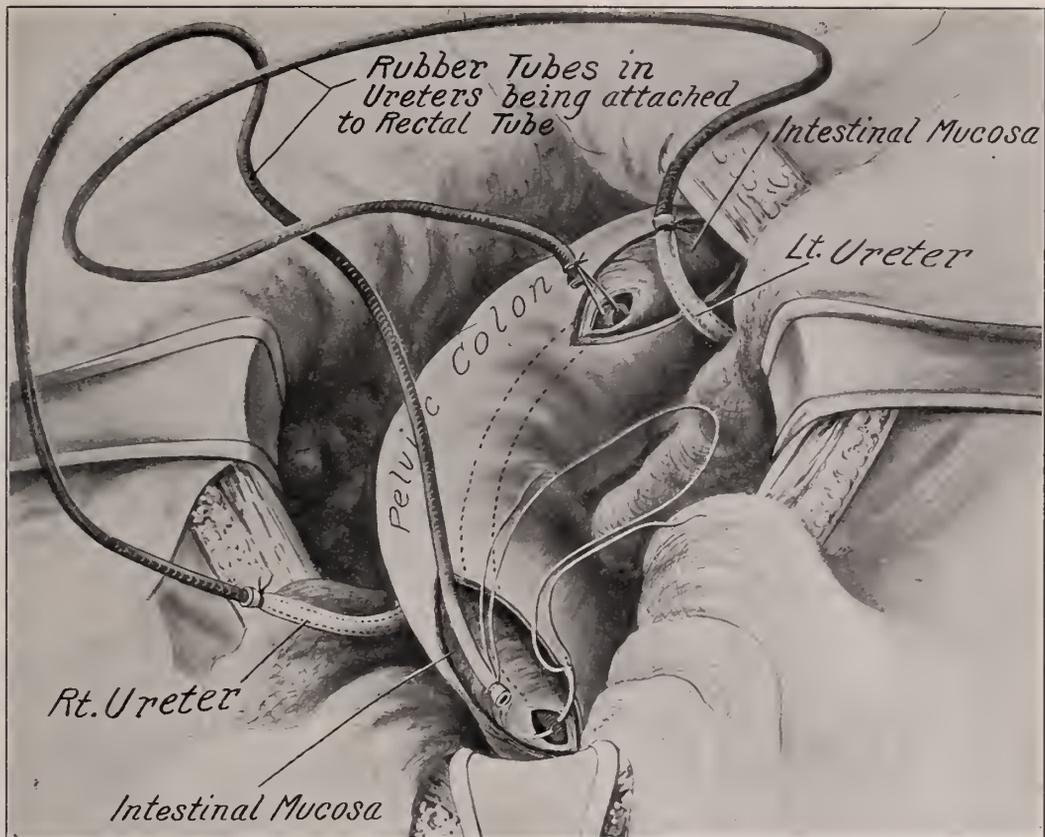


Fig. 1. Simultaneous implantation of right and left ureters. The two ureters have been severed and long rubber tubes fastened in them for temporary drainage of the kidneys. Tubes being attached to rectal tube in bowel, by which the ends of the small tubes will be drawn out through the anus and placed in a container. The end of the ureter will be drawn down and implanted in the intestinal wall outside the mucosa.

and there has not been the slightest disturbance from either of these operations. In other words, by the use of the tube to transmit the urine through the edematous tissues surrounding the anastomosis, the kidney functions just as if the ureter were brought out through a loin wound or through an abdominal wound. Therefore, both ureters may be implanted simultaneously with impunity and there seems to be no good reason why, in certain cases at least, the bladder could not be removed and ureters implanted, making a complete operation at one sitting. Even the combined operation is not so tedious as a radical hysterectomy but, of course, the question of whether this operation shall be done at one or two stages matters not, if we are only able to transplant both ureters at the same time.

The technic of the operation is as follows: A cathartic is given the night before operation. The abdomen is opened near the median line. A rectal tube is passed up into the pelvic colon to a point where it is desirable to implant the left ureter. This tube drains away all gas and any

possible fecal matter which may be present and makes unnecessary the use of clamps. The left ureter is exposed and ligated between forceps. The distal end is cauterized with carbolic acid and dropped back into its place. Into the proximal end is fastened a very small rubber tube two or more feet in length. This is done by passing a small straight needle armed with linen thread through the wall of the ureter and including barely enough of the tube to hold. Then tie the thread around both tube and ureter sufficiently tight to control the urine and later to cause sloughing of the tied end. The right ureter is then treated in the same manner. It will be found that the urine is discharging through both of these tubes.

Next the intestine on the left side is lifted at a point where the ureter may be inserted without tension or strain. Gauze is packed on either side of intestine so that any possible leakage from the intestine will be caught. An incision about one and one-half inches long is made near the center of the free margin of the large intestine and made

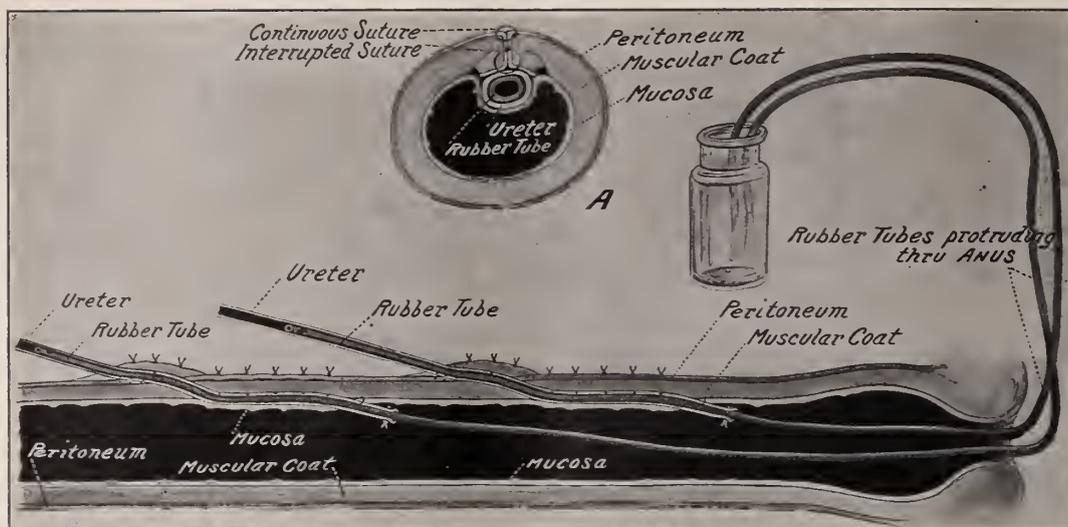


Fig. 2. Diagrams showing bilateral implantation of the ureters into the pelvic colon. A. Cross section of intestine at the site of ureteral implantation. B. Longitudinal section of pelvic colon into which both ureters have been implanted at the same sitting.

to curve over to the outer side. This incision goes through the peritoneum and muscle, and the mucosa is carefully freed from the muscularis, allowing the mucosa to pouch out through the incision in the muscular wall. The same is performed lower down the intestine on the right side.

A small stab wound is made through the mucosa at the lower angle of the intestinal wound and the end of the small rubber tube is attached by a linen suture to the end of the rectal tube. On the right side, a small incision is made in the mucosa and the end of the right ureteral tube is attached to the side of the rectal tube. A nurse then pulls down on the rectal tube and draws the two ureteral tubes down until the ends of the ureters are drawn well within the lumen of the intestine. The ureters containing the tubes now lie directly on and outside of the loose mucosa of the intestine. The wall of the intestine on either side of the cut, forming the two lips of the wound is drawn across the ureter and some of the sutures are made to penetrate the outer coat of the ureter. These sutures should be interrupted and of chromic catgut. Finally a continuous gut suture should roll the intestinal wall over the wall. The abdomen is closed. The tubes protruding from the rectum are cut to the proper length and placed in a container for the urine. The kidneys function without even temporary cessation, as if no operation had been performed. The tubes come away in about a week. The swelling in the intestinal wall has subsided and the implantation is complete.

This I feel completes our work of sixteen years in establishing this the fundamental principle of

radical bladder surgery. It would seem now that we should, with our attention focussed on diagnosis of bladder lesions, be able to get nearly all cancers in an early stage, for the bladder gives an alarm very early in the course of a disease. It is a well known fact that cancer of the bladder is more slow to leave the bladder itself than almost any other organ in the body, and, therefore, it should be one of the most hopeful forms of cancer as regards surgical treatment. In cases of carcinoma so far advanced that removal is impossible, transplantation of the ureters gives immediate and permanent relief to the patient and will give us an unlimited opportunity to treat the growth with enormous doses of radium. Why is it not possible to apply the same principles to treatment of cancer of the prostate and removal of the prostate, bladder, seminal vesicles and all and cure this almost hopeless condition as well? I think it is now possible.

#### CONCLUSIONS

1. The fundamental necessity for successful radical surgery of the bladder is the safe and comfortable disposition of the ureter.

2. The fundamental principle necessary to safely implant a duct delivering the secretions of an organ into the lumen of another organ with greater intravisceral pressure is that the duct of the first organ shall be collapsible and shall be made to run immediately under a collapsible mucous membrane for some distance before entering the lumen of the second organ of greater intravisceral pressure. Therefore, the fundamental principle in the implantation

of a ureter into the large intestine is that the ureter shall run for some distance immediately under the loose mucous membrane before it emerges into the lumen. Experimental and clinical observation teaches us that for a period of time, varying from three to seven days, after the implantation of a duct into the intestine, the edema in the field of operation blocks the duct and therefore obstructs the function of the organ. Hence the necessity in the past of implanting one ureter at a time. Therefore, a fundamental point in the technic of implantation of both ureters at the same sitting is that the urine shall be conducted past the field of operation by a non-collapsible tube until the local postoperative edema shall have subsided. Usually this is from three to six days in case of a ureter. This fundamental necessity we have met in the technic herein described. With the presentation of this technic, I feel that I have added the last link to the successful implantation of the ureter, which is admittedly the foundation of all radical surgery of the bladder.

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**Acute Cocain Poisoning.** In laboratory animals as well as in man, respiratory failure invariably precedes cardiac failure in cocain poisoning. Respiratory failure requires artificial respiration. In the past, artificial respiration, though resorted to both clinically and experimentally, has not been very successful. In the rabbit, however, A. L. Tatum, A. J. Atkinson and K. H. Collins, Chicago (*Journal A. M. A.*, April 18, 1925), have been able by artificial respiration alone to raise the lethal subcutaneous dosage from approximately 100 mg. per kilogram of body weight, the usual fatal dose, to from 300 to 350 mg. per kilogram, with return of efficient respiratory center function. In the dog, on the other hand, artificial respiration alone was an inadequate procedure. In both prevention and treatment of cocain convulsions the authors resorted to the use of hypnotics, either barbital sodium or a mixture of barbital sodium with paraldehyd. With the intravenous administration of 100 mg. of barbital sodium per kilogram of body weight, with 5 c.c. of a saturated solution of paraldehyd in saline solution per kilogram of body weight, they were able to raise the lethal subcutaneous dosage of cocain in the dog from approximately 26 mg. per kilogram to something over 100 mg. per kilogram, an increase of tolerance of approximately 400 per cent. This high tolerance was reached only in those animals to which the hypnotics had been given before the onset of convulsions.

## ARGUMENTS IN FAVOR OF THE PARASITIC ETIOLOGY OF CARCINOMA\*

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From the writings of the ancients we know that carcinoma was prevalent hundreds of years before the time of Christ; it was known in Egypt before the days of Moses; and we read of Hippocrates having treated carcinoma over two thousand years ago by cauterizing the cancerous lesion with hot irons; while some six hundred years later Galen, in his writings, described carcinoma fairly well. During the centuries down to the present time, carcinoma has been one of the most widely studied of all diseases, remaining all the while one of the least understood and consequently one of the least scientifically treated.

Since the dawn of the present century much time and labor have been devoted to the study of experimental carcinoma in lower animals. The importance of this work was not fully realized until 1902-03, when Jensen reported that he had been able to propagate a spontaneous mammary carcinoma, of the white mouse, for two and a half years through nineteen generations of white mice by inoculation of the cells from the spontaneous carcinoma through succeeding generations of the mice. Since that time many others have verified Jensen's work and have carried out variations thereof, the correct interpretation of the whole of which has brought out the following facts:

1. When mouse carcinoma tissue is inoculated into other white mice it is only the introduced carcinoma cells which survive; the introduced stroma always disappears and is replaced by connective tissue of the new host.
2. Some animals are immune to carcinoma; in others the inoculated carcinoma cells grow for a while and are then absorbed. Once this absorption has occurred it is impossible afterwards to get a successful "take" in that animal.

\* Compiled from papers read by Dr. Scott at meetings of members and guests of the Staff of St. James Hospital, Butte, Mont., June 14, 1924; Montana State Medical Association, July 10, 1924; St. Francis Clinical Society, St. Francis Hospital, San Francisco, Calif., Aug. 8, 1924; Riverside County (Calif.) Medical Society, Dec. 8, 1924; San Pedro Branch, Los Angeles County Medical Society, San Pedro, Calif., Dec. 16, 1924; Symposium Club of Los Angeles County Medical Society and Southern California Junior Pathological Society, Los Angeles, Calif., Dec. 17, 1924; King County Medical Society, Seattle, Wash., April 6, 1925; and Spokane County Medical Society, Spokane, Wash., April 13, 1925.

3. When the carcinoma cells disappear there is not at the same time destruction of the normal epithelium of the animal.

4. When inoculations of embryonic skin, placenta, mammary gland, spleen, normal skin or red blood cells are made into animals of the same species as the donor of the inoculated tissue, a relative immunity to carcinoma is produced and lasts for from ten days to three months. At the expiration of this time a successful inoculation of carcinoma cells may be made.

5. A growing carcinoma in a mouse is not influenced by the injection into that mouse of an emulsion of any of the above named tissues.

6. More recently it has been shown that, when embryonic tissues, normal epithelial tissues and mouse carcinoma cells are cultured in serum obtained from various animals which have been immunized through repeated injections of mouse carcinoma cells over a given length of time, all of these tissues will grow except the mouse carcinoma cells, which die within twenty-four hours; on the other hand, when similar tissues are cultured in the normal serum of similar animals, which have not been immunized, all the tissues will grow, including the mouse carcinoma cells.

While none of this experimental work has brought us any closer to the cause of carcinoma, it has explained the part that stroma plays in carcinoma and has shown that the carcinoma cell differs essentially from a normal embryonic or normal adult epithelial cell. It has also shown that certain white mice have an immunity against carcinoma; that others develop an immunity during the progress of the cancerous growth, resulting in the absorption of the growth; while still others are made more susceptible to carcinoma through inbreeding.

Fully aware that no amount of theorizing can hold ground in the face of demonstrable facts, which should make entirely unnecessary any consideration of the numerous theories, save one, of the etiology of carcinoma, I have learned, nevertheless, from many presentations of papers on this subject, that there are present at every meeting those who wish to bring up for discussion or for argument one or more of the many theories pertaining to carcinoma. Therefore, I shall answer their objections by briefly commenting on some of the best known of the theories which have been advanced in the effort to explain the etiologic factor or factors in car-

cinoma.\* Then, with a logical reconsideration of the clinical findings and the pathologic facts pertinent to carcinoma, I shall show that the parasitic theory is the only theory which carries a full and universally applicable explanation of all of the characteristics of carcinoma, and shall show that the Glover microorganism is the true and the only etiologic factor in carcinoma.

Briefly, some of the best known theories advanced in the effort to explain the etiology of carcinoma are as follows:

1. *The Theory of Embryonic Rests.* This theory holds that a malignant growth has its origin in cells or groups of cells which have been misplaced or arrested in the development of the fetus. These cells are isolated, maintain an embryonic character, and do not take on the function of adult tissue, their only property being that of growth; while quiescent they maintain their vitality and powers of growth, but upon the intervention of some stimulus—irritation or inflammation—are incited to an unrestricted increase and form a malignant tumor.

We know that nodules of tissues closely resembling in their structure the cortex of the adult suprarenal gland are sometimes found on the surface of the kidney and in rare cases on the liver, in the broad ligament, and in the spermatic cord; yet primary carcinoma is rare in these areas. The so-called "embryonic cell rests" would have to be present in all those parts of the body afflicted by carcinoma, if their presence, plus some form of irritation, is to be maintained as the etiologic factor in carcinoma, but in spite of the countless number of slides examined they have never been demonstrated microscopically. It is hard to maintain that these "cell rests," whose only property is growth, could be present in the body from the embryonic stage, remain latent, retain their vitality, receive nourishment and at the same time not make use of that only property, growth. It must be assumed that they receive nourishment, otherwise they would not have lived. Besides, this theory does not account for the atypical growth, formation of metastases or the latency seen in carcinoma. Why these "cell rests" should suddenly begin to grow after having remained latent for years, or from whence their malignancy, is beyond comprehension. If some form

\*As full explanations of these theories are to be found in so many of the text-books on the subject, and as the discussions pertaining thereto in the current contributions to our own and to foreign journals have been so prolific as to make the sources of references numerous, it is considered unnecessary to note here any particular references.

of irritation or inflammation is all that is necessary to incite these cell rests to unrestricted, malignant growth, why do not infants, children and young adults develop carcinoma, when subjected to various forms of irritation and inflammation common to them?

This theory can be disproved by examining microscopically sections of carcinomatous tissue. In carcinoma the cells show hyperchromatic mitoses, hypochromatic mitoses and asymmetrical mitoses; the nuclei vary in size and shape. Embryonic cells and every cell of the body (except spermatazoa and ova) contain the same number of chromosomes and the nuclei are regular in shape and size. Embryonic cells always follow fixed rules and develop into something higher; carcinomatous cells never do. One can readily see that this theory does not coincide with the known facts relative to carcinoma, and, though now generally considered as practically obsolete, for years it was probably the most universally accepted of the various hypotheses.

2. *Ribbert's Theory* holds that a malignant tumor is both *pre-* and *postnatal* in origin, and is due to a group of epithelial cells which have been isolated from their neighbors, in the same tissue or organ, by an abnormal development of the subjacent connective tissue the result of some irritation, and not due to any defect in the development of the cells themselves; once isolated, these cells take on an embryonic capacity for growth, proliferate freely and produce a malignant tumor.

Some of the most favorable places for the development of cancerous growths, according to this theory, would be in healing wounds; in healing skin grafts, where tissue has been transferred from one area to another; or the sites of skin incisions in operations. As every clinician knows, carcinoma is never met with in connection with such healing except in those wounds where infected epithelial cells have been accidentally transplanted while operating on carcinomata. It is plainly seen that this theory is at marked variance with what we know to be well-established clinical facts and, therefore, it must be rejected.

3. *The Theory of Injury, Inflammation or Chronic Irritation as the Cause of Carcinoma.* There are many who maintain that the etiologic factor in carcinoma is injury, inflammation or chronic irritation; in other words, that these agencies will of themselves cause carcinoma.

How many women are there who have sustained injuries to those parts most commonly affected by

carcinoma, in whom carcinoma never develops? In fact, what woman has not at some time sustained some such injury? Surely not a human goes through life without suffering injury, inflammation or irritation of many parts of the body. Therefore, how can it be maintained that these agencies are the cause of carcinoma, when it is so obvious that such an insignificantly small percentage of injuries, inflammations or irritations ever could have resulted in carcinoma, even if we ascribe every carcinoma to these causes. We know that chronic irritation may exist for years without inducing the habit of so-called "lawless growth" in the cell, although the tissues are in a state of constant reproduction.

If we investigate more closely, we shall readily see that it is usually those types of irritations or injuries that result in the permanent destruction or removal of the superficial protecting layers of epithelial structures that result in carcinoma. A striking example is found in chronic x-ray burns, where the superficial epithelial layers are destroyed, leaving the deeper layers exposed and oftentimes fissured. It is seen also in paraffin oil refiners, pitch workers, tar distillers, betel chewers, and in the Kashmirs who carry the kangri or fire basket. A similar exposure to carcinomatous infection obtained in the permanent exposure of the deep layers of the mucous membrane, as we had in the old unhealed wounds following nasal surgery, as practiced before submucous resections were performed. On the other hand, chronic irritations which do not cause such destruction seldom result in carcinoma, as is evidenced in the chronic irritations resulting in callus, found notably on the palms of the hands and the soles of the feet; in spite of the practically universal prevalence of such chronic irritations we rarely find them the site of a carcinomatous infection.

This marked variation in the supervention of carcinoma is due to the fact that the organism cannot find an entrance through the heavy corium in the latter instances, while it meets no such barrier in the former, where the very nature of the resulting injury is such as to provide conditions most suitable for the invasion of the epithelial cell by the carcinoma organism. Since only such an insignificantly small percentage of the epithelium subjected to injury, inflammation or chronic irritation ever becomes cancerous, it proves that the result of injury, inflammation or chronic irritation is one condition and that carcinoma is an entirely different condition.

What, then, could bring about this change from the former to the latter, other than a parasite. Furthermore, in no instance in which tissue subjected to injury, inflammation or chronic irritation becomes the site of a carcinoma, can the presence of the carcinoma organism be eliminated. We see that, once the natural protective surface is removed or destroyed, the deeper epithelial tissues are exposed to infection and, therefore, there is an increased possibility of carcinoma developing, as the organism, being universally present, is furnished with a very favorable opportunity for invasion; but in no way is the carcinoma the direct result of the injury, inflammation or irritation, no matter of what nature, or how destructive, or how prolonged.

#### 4. *Chemical Irritants as the Cause of Carcinoma.*

Various forms of chemical irritants are said by some to be the etiologic factors in carcinoma. As with injuries and inflammations, these irritants simply break the resistance of the normal epithelial cells and make them susceptible to invasion by the carcinoma organism. In animal experimental work the continued application of tar, oil, soot, scharlach red, soudan III, etc., will produce in some instances a local lesion with a proliferation of cells structurally resembling carcinoma but lacking two essentials of carcinoma, viz., (1) the formation of distant metastases, and (2) malignancy. This chemically-produced proliferation is usually local and limited to the zone of irritation, and once the epithelial cells get beyond that zone proliferation ceases. This proves that whatever causes the carcinoma cells to proliferate must be living and carried with them and transmitted on from cell to cell in order to be able to constantly stimulate the cells to divide. This chemically-caused proliferation does provide, however, a most fertile soil for the invasion and growth of the organism. But as "the irritation of the soil by the plow and the harrow," in the words of Dr. Alex. Theo. Brand, "prepares the field for a wheat-crop but does not produce a field of wheat unless wheat-seed be sown," so the irritation of epithelial tissue by these chemical irritants does prepare the tissues for the invasion of the carcinoma organism but does not produce carcinoma, unless the carcinoma organism be implanted on the prepared field.

To maintain that injury, inflammation, or chronic irritation, whether of chemical or of any other nature, or the lesions resulting from them are the etiologic factors in the production of carcinoma is

as illogical as to hold that the bullet or the bullet wound are the etiologic factors in producing tetanus; and as illogical as to insist that the wooden splinter, the brass pin, the surgeon's knife or the wounds produced by any of these are the etiologic factors in the production of erysipelas or pyogenic infections. It is the invading organism alone which determines whether these wounds will result in erysipelas, in pus-formation, in tetanus, in rabies or in any other type of infection; and it is the absence of all organisms, or the ability of the body to destroy such organisms as are carried into the wound, that gives us freedom from infection and a sterile wound.

5. *Theory of Disturbance in Metabolism.* As indicated, this theory maintains that the etiologic factor in carcinoma is a disturbance in metabolism.

We know that carcinoma cannot be produced experimentally in animals by producing any known change in their metabolism; while, on the other hand, when carcinoma cells are inoculated into perfectly healthy animals of the same species, whose metabolism is apparently normal, the cells do grow and cause death.

6. *Theory of Changes in Internal Secretions.* This theory holds that a deficiency or an excess or other abnormal change in internal secretions will *per se* cause carcinoma.

It is difficult to understand how a deficiency, excess or abnormal change in internal secretions can change the nature of epithelial cells so that, when they are inoculated into other animals of the same species—healthy animals whose internal secretions are apparently normal—they will grow from generation to generation and eventually cause the death of these animals. Animals whose internal secreting glands are experimentally injured or destroyed do not as a result develop carcinoma.

Since carcinoma cannot be caused by producing any degree of variation from normal of internal secretions, and, further, since carcinoma cells when inoculated into animals whose internal secretions are normal do continue to grow, one must admit that abnormal changes in internal secretions cannot be the cause of carcinoma.

7. *Theory of Senile Changes.* This theory ascribes those changes which come with advancing years as the etiologic factor in the development of carcinoma.

Senile changes seldom occur in one small area alone, as carcinoma occurs, but are usually gener-

alized and manifested by general changes throughout the body. When carcinoma is grafted into young animals, in which there are no senile changes, the grafts will continue to grow. Carcinoma cannot be produced in animals experimentally by producing senile changes in them, though typical senile changes are produced. Again, this theory of senile changes would need radical reconstruction now, as carcinoma has gradually, and of late years quite rapidly, found younger and younger victims who show no evidence whatsoever of any senile changes.

If it were true that disturbed metabolism, disturbed internal secretions or senile changes are the cause or causes of carcinoma, by what line of reasoning could we justify, except as a palliative measure, the resort to surgery or to any method of physical removal or destruction or to any form of radiation or any other local treatment for a carcinomatous tumor or lesion, no matter where located and no matter whether treated early or late. Carcinoma, if caused by any of the conditions just enumerated, would be but a local manifestation or a local effect of a general or constitutional disturbance or condition which could never be cured by local treatment of any character, any more than hyperthyroidism with exophthalmus could be cured by removing the patient's eyes. But as this supposition is not correct, since carcinoma, which starts as a local lesion, is due to a pathogenic infection and produces systemic signs and symptoms due to the absorption of toxins produced by the carcinoma organism, treatment aimed at the removal or the destruction of the local lesion is perfectly rational, just as is the case in dealing with any other local infection. And the results, too, are governed by the same conditions that obtain in the treatment of other local infections. Anyone who advocates or endorses any form of local treatment for carcinoma—surgery, cautery, paste, radiation, diathermy, galvanic desiccation or dehydration—with a view to the eradication of the disease, thereby endorses the parasitic theory of the origin of carcinoma, regardless of whether he intends doing so or not.

8. *The Parasitic Theory.* For some years the leading medical men have been divided on the question of the parasitic origin of carcinoma. The members of one group have held more or less staunchly to the plausibility of this theory; the others have firmly denounced even the possibility of such a theory's being correct, though they are seldom able

to offer any reason, or at most offer only negative reasons, for their disbelief and have never been able to offer any other provable theory of the etiology of carcinoma.

There are those who argue that carcinoma is due to many causes but these men are unable to name one cause and prove it; no doubt they confuse the predisposing conditions or contributing factors with the ultimate or etiologic cause. Others state that the age-incidence of the disease is against its being caused by an organism. If these objectors will observe the age-incidence of the conditions which break the resistance of the normal epithelial cells, they will have an explanation of the age-incidence of carcinoma and will also see that few of these conditions are present in children or young adults.

Now let us examine the clinical facts observed in carcinomata and we shall find that they all favor and point to an organism as the cause of carcinoma:

1. Local origin of primary growth. This is in favor of infection, is similar to other diseases known to be infectious and rules out the theories of senile changes, disturbed metabolism, and abnormal internal secretions.

2. Carcinoma usually follows and is carried by the lymphatics from the point of local origin. This is common in most infections. Examples: syphilis, boils, etc.

3. Carcinoma is selective for epithelial tissue. In most diseases that we know to be caused by organisms they are selective for certain tissues of the body. Examples: pneumococci for the lungs; diphtheria bacilli for mucous membranes; typhoid bacilli for Peyer's patches; rabies for nerve cells; exanthematous diseases for squamous cells of epithelium, etc.

4. Latency. No theory of carcinoma, other than the microbic, can explain the latency met with in this disease. Latency is common to other infective diseases. Examples: gallbladder and bone abscesses in typhoid; gummata in syphilis, etc.

5. The virulence of mouse carcinomatous cells can be increased by passing through other mice. The virulence of every pathogenic organism is increased by passing through animals or through humans.

6. Most clinicians have often experienced great difficulty in differentiating between syphilis, tuberculosis and carcinoma of the tongue, tonsil, mouth, larynx, stomach or bowel. Many such cases appear which defy the most experienced men, and

until a section of the lesion is examined a diagnosis cannot be made. If these three diseases look so much alike and if two of them are known to be caused by organisms, is it not reasonable to assume that the third, carcinoma, must be caused, or at least may be caused by an organism?

7. Patients suffering from carcinoma exhibit specific symptoms, such as general weakness, loss of weight, peculiar straw-coloration of skin, tumor mass, a typical odor, etc. All other infectious diseases have their own specific clinical characteristics.

8. Carcinoma is more prevalent in certain localities than in others and the prevalence varies with certain differences in local conditions of sanitation. This is well proven by the statistics of our own and of other countries and the causes responsible for these variations are most interesting when studied in the light of the parasitic etiology of the disease. These characteristics apply also to other infectious diseases. We see, therefore, that the theory of the parasitic origin of carcinoma is the only theory susceptible of universal application.

Finally, as a result of Dr. Glover's research work on carcinoma—in which a similar organism has been isolated and obtained in pure cultures from every type of carcinoma; and with repeated inoculations of pure subcultures of this organism into other animals carcinomata with metastases are regularly produced; and the same organism again recovered from these growths and grown again in pure cultures—the question of the etiology of this disease has been settled by fully demonstrating that the Glover microorganism is the etiologic factor in carcinoma.<sup>1, 2, 3</sup>

If we wish to make any substantial progress in the treatment or the prevention of carcinoma, we must in this disease use pathology for classification purposes only, discard the different pathologic theories, all of which have been and are hopeless; and depend more on bacteriology, for then, and *only* then can carcinoma be explained and understood, and scientifically treated or prevented.

(Lack of space prevents publication of this entire paper and the numerous photographs and microphotographs that accompany it, some few of which appeared in the preceding issue of this journal.)

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## SACRAL ANESTHESIA\*

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When I was asked to address you on sacral anesthesia I hesitated in doing so, as I have used less than forty such anesthetics, but upon inquiry I found that little of this work is being done here, therefore will give you the benefit of my limited experience on the subject.

In the last eight or ten months I have been much interested in this work and have read considerably on the subject. The more I have learned about it the more useful and satisfactory the work becomes, and I feel that it is only a matter of time until the profession will become more familiar with this procedure, and then it will become of general use.

Anesthesia of the sacral nerves is entirely satisfactory for most operations that are to be carried out in the field supplied by these nerves. It entails practically no immediate or remote risk for the patient and has been proven very efficient and satisfactory. In my series of cases I have had but two failures, these being the second and fourth cases I did, the reason being inexperience with the procedure.

The first of these two cases was a woman on whom I was doing repair work. I did not wait but began immediately following the injection. As she complained quite a little and being in a hurry, I had gas given, which was satisfactory. After getting her thoroughly under the gas for a few minutes, it was discontinued and the work completed with the anesthetic from the sacral block.

The second case was practically the same, being a similar case and a like procedure was carried out. In the remaining cases it was ideally satisfactory. The one objection, which is not a real one and should not be considered, is that it consumes much more time to get the anesthetic established than it does for gas and ether, especially if one has to do the injection and operation also. Of course, if these cases could be injected and ready for the operator, this would do away with the delay. Therefore, busy hospitals and busy operators do not like to put in the extra time. Consequently it is not becoming popular rapidly, but it has a distinct place.

\* Read before the Kootenai County Medical Society, Coeur d'Alene, Ida., February, 1925.

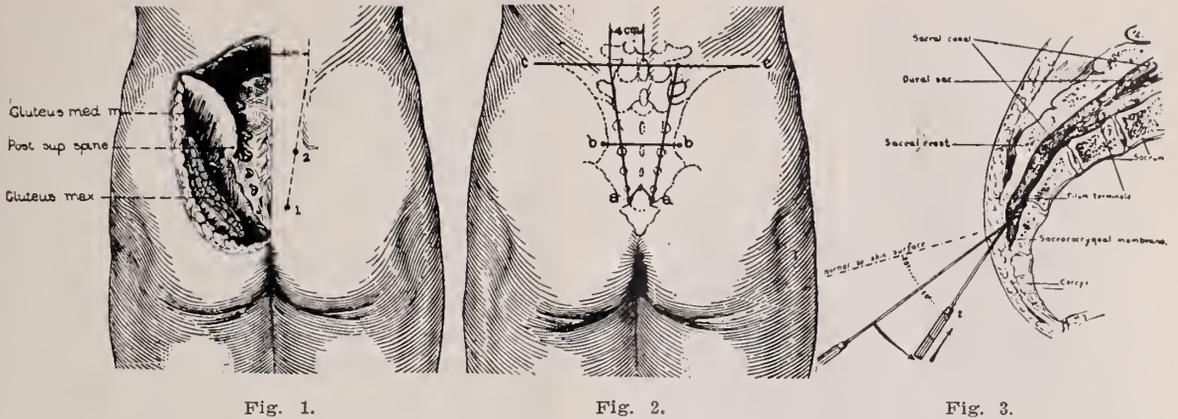


Fig. 1.

Fig. 2.

Fig. 3.

- Fig. 1. Transsacral block. The superficial landmarks in relation to the posterior sacral foramina. (Labat.)  
 Fig. 2. Transsacral block. Tracing of the lateral rows of sacral foramina on skin surface; a, a, are the sacral cornua; b, b, the posterior superior iliac spine; c, c, line tangent to the highest points of the iliac crests. (Labat.)  
 Fig. 3. Sacral block. After piercing the sacrococcygeal membrane the needle impinges on the anterior wall of the sacral canal and passes from position 1 to position 2 in the direction of the arrows. (Labat.)

In this series of cases I have operated on prostates, ulcer of bladder, hemorrhoids, also doing perineorrhaphies, tracheorrhaphies, anterior colporrhaphy, curettements, etc. I have followed Labot's methods rather closely in my work and will take the privilege of quoting from his work on regional anesthesia and also from Meeker.

It is difficult to understand why eminent authorities on local anesthesia should classify sacral nerve block with spinal anesthesia. Whether sacral nerves are blocked by the parasacral, the simple epidural injection or the transsacral method, the procedure is essentially different from spinal anesthesia and should not be confused with it. The nerves in the sacral canal are identical with nerve trunks in the other parts of the body, and in injecting them with anesthetic solution within the sacral canal and at their exit through the sacral foramina, they are affected the same as other nerve trunks would be by paraneural injection.

In spinal anesthesia the injection is made in the dural sac, confined within at all times and distributed through the spinal fluid. In spinal nerve block by the simple epidural injection the fluid may ascend the vertebral canal in the extra dural space, when a large amount is injected. It also empties through the sacral foramina in all directions but in proper technic it never penetrates the dural sac to mingle with the spinal fluid. There is no more reason why transsacral or simple epidural injection method should be confused with spinal an-

esthesia than blocking of nerves by the parasacral method.

There are certain advantages of sacral anesthesia, which is an improved method of all other forms of nerve block over general anesthesia, in that there is a lowered remote and immediate risk to operation. The possibility of complications is eliminated. Nausea, vomiting and thirst are absent. Instead the patients are comfortable in every way and may be fed fairly good meals several hours after the operation. Another advantage is that liquids may be given patients during the course of the operation.

The term sacral anesthesia may be a little confusing. Any method of anesthesia in which the sacral nerves are anesthetized may be termed sacral anesthesia, such as (a) transsacral block which is done through the sacral foramina from the back, (b) parasacral block which is anesthetizing the nerves at their exit on the anterior surface of the sacrum, (c) cardal block, extra dural, epidural, all meaning the same. This anesthesia is done through the hiatus, injecting the anesthetic into the sacral canal.

It is quite important in these cases to give a preliminary dose of morphine, as it does much to allay the nervousness and excitement which is more or less common in patients, preceding operations of any moment. It is my plan to give morphine sulphate, gr. 1/4, with scopolamine, gr. 1/150 (in normal individuals and barring complications), one

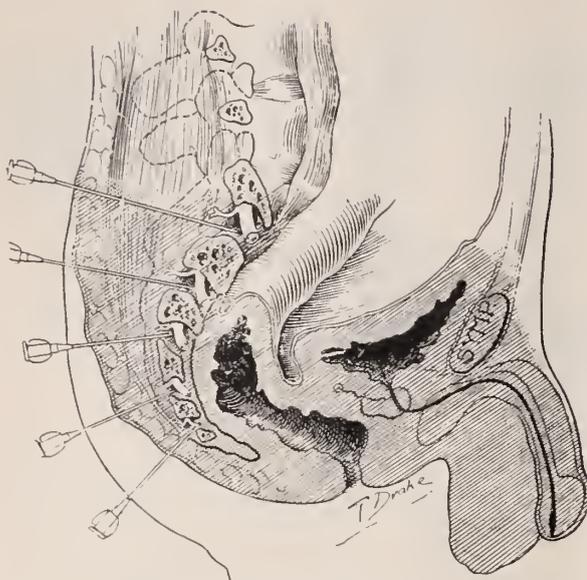


Fig. 4. Median longitudinal section of the pelvis anterior to the sacrum. The shaded portions represent the extent of anesthesia. Note the variable thickness of tissues over the sacrum, and different direction of needles in entering the different foramina. (Meeker and Scholl.)

hour before the time of the sacral injection. When the patient reaches the surgery, if he does not show the effect of the preliminary dose, I give another dose of morphine, gr. 1/8. These preliminary doses are always given hypodermically.

It is important now to wait from fifteen to thirty minutes before beginning the operation after the sacral injection, and a good way to test for the anesthesia is to punch with a hemostat around the anal margin. When complete anesthesia is secured, the anus will often relax and stand open, and the operative procedure can proceed without the least sensation to the patient, while often a conversation between him and nurse at the head is carried on.

The percentage of novocain, which is the anesthetic of choice, varies with various authors, some using rather weak solutions and larger quantities and others using a smaller quantity of a stronger solution. In my cases I have used a 2 per cent solution for the cardal and a 1 per cent for the nerve block.

The procedure of giving this anesthesia I will briefly describe. "The patient is placed flat on the abdomen with a cushion under the hips, thereby bringing the landmarks into prominence, also making them more accessible. The sacral hiatus is then defined by passing the tip of the left index finger from the end of the coccyx upwards along its prominence until just above the gluteal fold, at which point a depression is felt. This marks the

junction of the sacrum and coccyx. A ridge can be felt on either side of this depression, this being the cornu or lateral margin of the sacral hiatus. An intradermal wheal is made here. A needle 10 cm. long, preferably one with a bevelled stilet, with its bevelled edge turned upward, is introduced through the wheal at an angle of about 20 degrees. It is gently pushed forward until the sacrococcygeal membrane is pierced. We are then in the sacral hiatus. The needle is advanced until it comes in contact with the bone. It is then withdrawn about 1 or 2 mm. and the hub of the needle is bent downward towards the gluteal fold at an angle of about 40 degrees or more when necessary. The needle is then advanced into the sacral canal, keeping in the midline until about 6 cm. have disappeared. It is a good plan to keep the tip of the left index finger at the point where the needle entered, as it helps to steady the needle and to depress its proximal end when necessary.

The stilet is then withdrawn and the hub of the needle is watched for spinal fluid or blood. If either is found to escape, the needle is withdrawn a little until the flow ceases. After all the air bubbles have been expressed, the syringe is attached to the needle, and the piston withdrawn a little to ascertain beyond all doubt that the injection is not made intravenously or into the intradural space. All details having been observed, 30 c.c. of the solution are then injected very slowly until most of the fluid is deposited. The rest of the fluid is slowly distributed while the needle is being withdrawn, the last few drops being deposited just beneath the sacrococcygeal membrane. A piece of sterile gauze is placed over this area. This completes the epidural injection or sacral block.

For the transsacral block the patient is retained in the same position. The posterior superior spine of the ilium is located by passing the finger along the crest of the bone. In very fat subjects it can often be seen as a dimple or depression. A point about 1 cm. below and internal to it indicates the second sacral foramen. This is marked with an intradermal wheal. The sacral cornu on the same side is defined as previously described, and a similar mark is made, indicating the fifth sacral foramen. A line is then drawn between these two points and an intradermal wheal is raised at either end. Two similar wheals are raised on this line at equal distances from both ends and from each other, dividing the line into three equal parts, thus marking the third and fourth sacral foramina. A point about

2.5 cm. above the upper end of this line and in the same general direction, i.e., upwards and slightly outwards, marks the first sacral foramen, where a wheal is raised.

A needle about 10 cm. long is introduced perpendicularly to the skin and slowly advanced to a depth of from 4 to 8 cm. This will vary with the amount of adipose tissue encountered. When the needle makes contact with the posterior surface of the sacrum, it is moved about slowly until it is felt to sink to a deeper level. We are then in the sacral foramen. Here the needle is advanced not more than 2 cm. in the first sacral foramen. The same observations relative to the possible flow of blood, as previously described, are made. If no blood escapes from the needle, the syringe is attached and withdrawn a little to ascertain its position as regards a blood vessel. Six c.c. of the solution are then injected. The same needle can be used for the second foramen, keeping in mind that there the needle must not be advanced to the same depth, as the sacrum here is much more convex and therefore nearer to the skin. Here inject 5 c.c. of the solution. For the third foramen a needle half the length is sufficient and only 4 c.c. of the solution are injected. The fourth sacral foramen is again nearer to the surface than the third and the canal is only about 1 cm. long. Here 2 c.c. are injected. Finally, the fifth foramen is injected just beneath the sacrococcygeal membrane, 2 c.c. being deposited here."

### BLOCK ANESTHESIA IN NASAL SURGERY\*

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From Attix Clinic

Nasal surgery may truthfully be said to have been developed and raised to its present dignity because the discovery of local anesthesia and ischemia made it possible. Just as in the field of general surgery all modern progress dates from the discovery of ether and its introduction to the profession by Morton, so practically all nasal surgery dates from the introduction of cocain as a local anesthetic by Karl Koller, in 1884. I have often wondered, as I have passed by the Morton statue in Boston, why ophthalmologists and oto-laryngologists especially, to say nothing of a greatly increasing

number of general surgeons who are today employing local anesthesia by preference, have not planned a suitable memorial of appreciation to Karl Koller.

Following the use of cocain, which produced not only local anesthesia but ischemia as well, when applied to mucous surfaces, came the use of the drug by injection. The fatal results from the injection of toxic doses of cocain would probably have led to the abandonment of its use, had not Schleich demonstrated the value of infiltration anesthesia, employing very weak solutions.

At about this time were developed a number of substitutes for cocain, having anesthetic properties comparable to it but being less toxic in their systemic effects. While no one would presume to state that the last word has been said in the discovery of an ideal local anesthetic, novocain, introduced by Einhorn, in 1905, comes as near to perfection as anything yet found. It fills the requirements of being relatively nontoxic, nonirritating to tissues when injected, satisfactory as an anesthetic and easily sterilized. The use of novocain infiltration anesthesia has become so widely employed by general surgeons that it is regarded by many as essential as general anesthesia, and wonderful progress has been made since it came into use.

To the names of Koller and Einhorn must be added another who made possible the work to which this paper refers, namely Corning, who in 1885 demonstrated the feasibility of blocking sensation in sensory nerves distal to the point of injection. To this trinity of the founders of modern local anesthesia I feel that modern surgery owes homage: Koller, Einhorn and Corning.

It is apparent that massive infiltration anesthesia is not feasible in nasal surgery, as the edema which results reduces the size of the normally small cavity in which the operative field is located. The vasoconstricting effects of cocain and adrenalin applied topically add greatly to the accessibility of the field of operation.

It is possible, by means of a spray of 2 per cent cocain, with 1/5,000 adrenalin, to secure a superficial anesthesia and vasoconstriction which will render the field more accessible and make it possible to employ one type of block anesthesia which is quite commonly used, cocain adrenalin paste, or "mud," using flake cocain and 1/1,000 adrenalin.

I make use of some fine applicators, made of tonsil snare wire set in small handles. The tip is wound with a bit of cotton which is dipped in the mud and this is placed at the site of the point of en-

\* Read before the Montana Academy of Oto-Ophthalmology, Great Falls, Mont., Jan. 26, 1925.

trance into the nasal cavity of the nerves to be blocked.

Just back of the posterior end of the middle turbinal emerge, through the sphenopalatine foramen, some of the branches of the sphenopalatine ganglion which supply sensation to the posterior ethmoid and sphenoid region. On the roof of the nasal attic, just above the anterior end of the middle turbinal, emerge the lateral and mesial nasal branches of the anterior ethmoidal. Applications of cocain mud at these points will in most cases give satisfactory anesthesia to the ethmoid and sphenoid regions, to the upper part of the septum and the anterior part ordinarily the site of septum resection, and the anterior part of the lower turbinal. A branch from the sphenopalatine ganglion supplying the posterior part of the lower turbinal is not blocked with as much certainty by this application and usually requires some extra local applications to the turbinal. This block anesthesia is very satisfactory for most intranasal operations but is not possible in certain cases, where there is marked obstruction due to hypertrophy or deformity as a result of septal deflections.

There is an additional disadvantage of possible toxic effect in some individuals, although I believe that where there has been a preliminary vasoconstriction established by the use of adrenalin, and care is taken to have no excess of the mud on the applicators which might allow some of the cocain to be swallowed, the danger of toxic absorption is not great. However, it must be admitted there is this possibility, and on this account any method of anesthesia, which will produce the desired results without the danger of cocain intoxication, will be of great value, and may come to be regarded as the method of choice.

Such a method is available in block injections of novocain, which when made with proper technic enable us to secure dependable anesthesia of the whole intranasal field "*cito, tute et jucunde.*"

The practicability of block anesthesia involves the consideration of the following points:

1. The accessibility of the points to be blocked.
2. The amount of discomfort in making the block, both at the time of injection and the after effects of the solution after anesthesia has disappeared.
3. The relative toxicity of the anesthetic.
4. The risk of infection in making the injection, considering the sterility of the solution and the

possibility of carrying in some infection at the point of injection.

5. The risk of damaging blood vessels and nerves in introducing the needle.

6. The risk of damaging adjacent structures.

Discussing these points seriatim, we may state the routes of injection have been so carefully worked out that, with a knowledge of the anatomy of the fifth nerve and a careful following of the details of technic, as may be found in such works as those of Allen, Hirschell and Arthur Smith, it is possible to gain access to the nerve structures to be blocked with comparative ease. The amount of discomfort is not greater and often less than that felt in making intranasal applications, if care is exercised in making injections to have suitable needles, properly sharpened and general points of technic are followed. The possibility of "after pains," due largely to the use of solutions which are not isotonic, may be largely done away with by using physiologic salt solution, or, as urged by Smith, Ringer's solution.

The toxicity of novocain in the 2 per cent solution usually employed and in the small quantities injected is practically nil. Infection is reduced to a minimum by careful sterilization of solutions and by sterilizing the site of injection by application of iodine, or as I prefer, McDonald's solution (1 per cent pyxol in alcohol).

The routes of injection employed involve no special risk to blood vessels in normal cases. There may be some damage done to nerves, if the needle actually enters the nerve structure, especially if the point is dull and causes a laceration. However, in the technic used the injections are paraneural and not endoneural, the anesthetic acting on the nerve through the nerve sheath which, it will be remembered, is relatively thin at the points of their exit from the cranium, near which the injections are made.

In making deep orbital injections there is some danger of injury to the optic nerve, and for this reason such injections are not advised. Injections into the sphenopalatine fossa may, if too large, infiltrate the orbital cavity and cause some temporary disturbance of the extrinsic muscles of the eye, but this is only temporary.

The nerve blocking used in nasal surgery is directed to the following points: The supraorbital and supratrochlear nerves at the supraorbital margin, the anterior ethmoidal foramen, the infraorbital

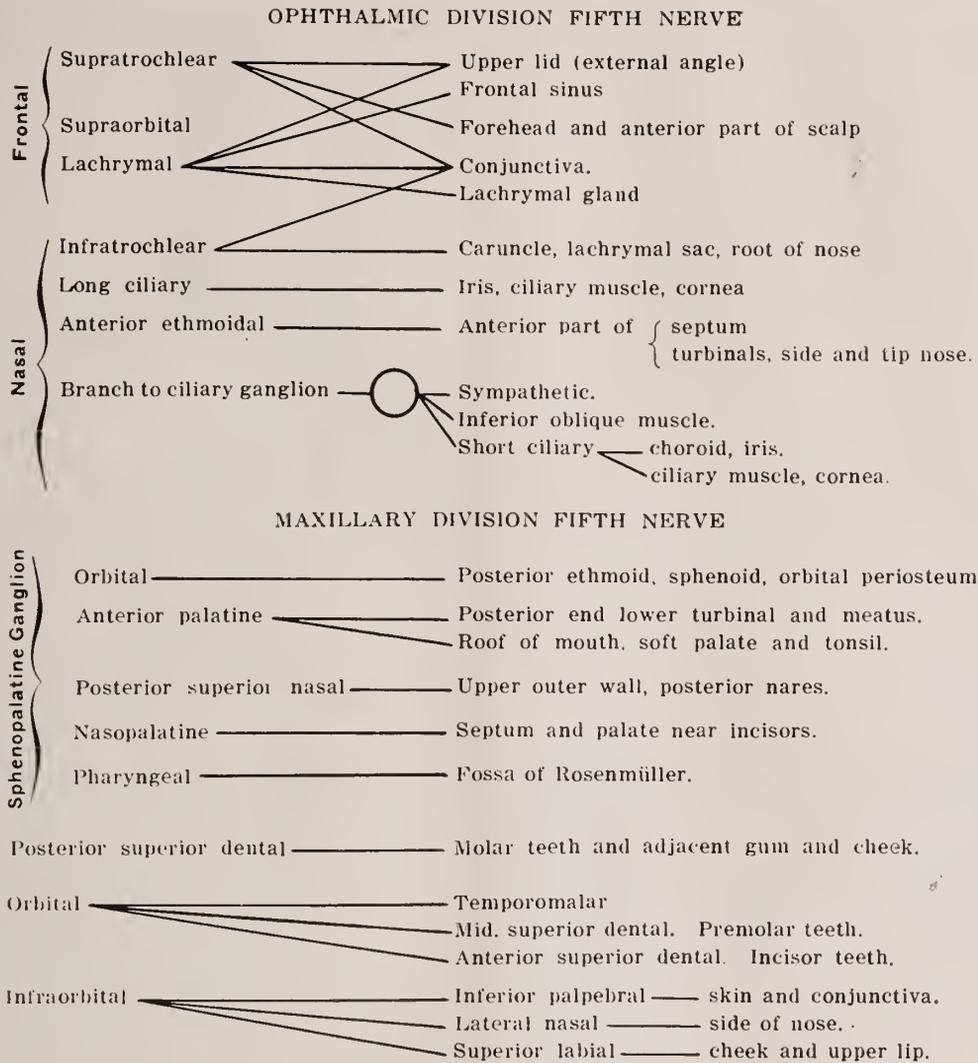


Fig. 1.

foramen, the sphenopalatine fossa, the anterior palatine foramen.

By means of these blocks it is possible to perform all the ordinary nasal and related operations on the following structures: Frontal sinus, lachrymal sac, nasal bones, nasal septum, ethmoid, sphenoid, turbinals.

For the purpose of reviewing the anatomic points touched upon in this paper, the following schema of the distribution of the ophthalmic and maxillary divisions of the fifth nerve is shown:

**TECHNIC**

Some details as to the technic of making block injections may be mentioned here. A well made syringe, capable of thorough sterilization and fitted with Luer tip is desirable. A capacity of 5 c.c. is large enough.

A variety of needles are available. The set de-

signed by Arthur Smith and mentioned in his work is excellent, but I have found the Schimmel needles, used in suitable adapters, very serviceable. For making the injection into the sphenopalatine fossa a special curved needle is required, but here the Schimmel needle may be used with a specially curved adapter.

In addition to a thorough review of fifth nerve anatomy, it is essential to practice frequently on the skull the passing of needles to keep one's sense of orientation.

The point of the needle should be sharp so as to avoid any unnecessary trauma. The anesthetic used is 2 per cent novocain in physiologic saline, containing five drops of adrenalin to the ounce. The site of injection should be sterilized by the use of iodine or McDonald's solution. This is comparatively easy to use on the skin, but when intraoral injections are made, especial care must be exercised to

have the mucosa well dried, with the lip or cheek held aside before applying the antiseptic, and the field kept clean until the injection is made.

A slight infiltration wheal made at the point of injection and the deposit of a small amount of novocain along the track of the injection will reduce the discomfort of the block which is usually but slight. Special caution is to be taken to avoid any bending of the needle which may result in breaking it off in the tissues.

*Supraorbital and supratrochlear block.* Elevate the eyebrow and inject about 4 c.c. just over the supraorbital foramen and mesial thereto. This injection will produce maximum anesthesia in about three minutes, if the fluid is deposited close to the periosteum, as the tissues are not easily distensible and absorption by the nerves is therefore more rapid.

*Anterior ethmoid block.* Injection is made just above the inner canthus. A small wheal is made, and the needle carried directly back on the level of the nasion to a depth of 2 cm., where 2 c.c. of the novocain solution is deposited. This blocks the anterior ethmoid and infratrochlear branches and may have some effect on the posterior ethmoid. It is possible, by carrying the needle  $1\frac{1}{2}$  cm. further back, to block the posterior ethmoid, but this is not advisable because of the proximity of the optic nerve. The anterior ethmoid injection properly made is practically devoid of danger, if care is exercised to keep the needle close to the orbital wall.

*Infraorbital block.* Bearing in mind the landmarks, the infraorbital foramen is located about 1 cm. below the junction of the second and third fifths of the lower border of the orbit. It will be further remembered that this foramen is in the path of a line drawn from the mental foramen through the root of the second bicuspid tooth to the supraorbital foramen.

The injection is made at the highest point of the labial fold, carrying the needle to the site of the foramen, where it may be palpated by the finger. Two or three c.c. of the novocain solution are injected, if possible, into the foramen, and massaged gently into the infraorbital canal. By this means the anterior superior dental nerve is anesthetized, affecting the cuspid and incisor teeth and the anterior antral wall. About ten minutes are required for the effect of the block to be complete.

*Sphenopalatine block.* Traversing the sphenopalatine fossa is the maxillary division of the fifth nerve and its associated sphenopalatine ganglion.

TABLE OF BLOCK INJECTIONS

Block	Depth (cm.)	Amount (c.c.)	Time (min.)
Anterior ethmoid	2	2	10
Infraorbital	2	3	10
Sphenopalatine	3	4	15
Anterior palatine	1	$\frac{1}{2}$	1
Supraorbital		4	3

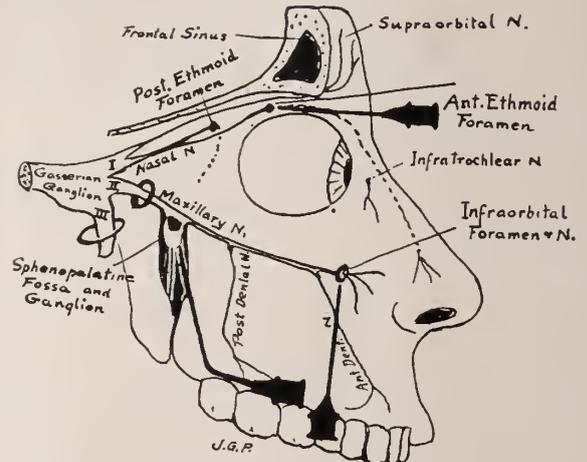


Fig. 2. Showing position of needles in blocks of anterior ethmoidal, infraorbital and sphenopalatine.

The most accessible route to this fossa is found intraorally. With the mouth half open the specially curved needle is inserted opposite the root of the third molar tooth, carried up, in and back about 30 mm., the average distance to the sphenopalatine fossa. About 4 c.c. of the novocain solution is injected. After about fifteen minutes anesthesia is complete in the terminal fibres of the maxillary division. The sphenopalatine ganglion and its branches are more directly affected.

In cases where a badly infected mouth or inability to open the mouth make it impracticable to make the intraoral injection, the sphenopalatine block may be made extraorally. The injection is more difficult to make and requires a longer needle. Injection is made in the angle formed by the lower border of the malar bone and the coronoid process of the mandible. The needle is carried up, in and back at an angle of 40 degrees from the horizontal plane, for a distance of about 50 mm.

*Anterior palatine block.* The anterior palatine foramen is injected by introducing the needle, directed across the mouth, at a point half way between the gum line of the third molar tooth and the mid line of the palate. One-half c.c. of the novocain solution injected here produces anesthesia in a minute's time.

Under the anesthesia produced by the blocks just mentioned it is possible to perform any of the op-

erations of modern nasal and sinus surgery, making the provision that interlacing fibres from the opposite side must be obtunded by a little infiltration under the upper lip in operating on the antrum, and a corresponding infiltration needs to be made in operating on the frontal sinus. Also, because of the risk involved in blocking the posterior ethmoidal, as before mentioned, it may be desirable to use a topical application of cocain to the anterior wall of the sphenoid in operating on that sinus.

It is also advisable, in my judgment, to use a preliminary hypodermic of morphin as a prophylactic against shock and postoperative pain. It is also desirable to use some local infiltration mostly for the ischemic effect of the adrenalin in operating on the frontal sinus, lachrymal sac and antrum. Intranasally the adrenalin is applied locally, as in cocain anesthesia.

#### OPERATIONS AND BLOCKS REQUIRED

*Frontal sinus, intranasal.* Anterior ethmoid and sphenopalatine block. For the external frontal operation, make the additional block of the supra-orbital and supratrochlear, and infiltration of the line of incision and interlacing fibres from the opposite side.

*Lachrymal sac.* Anterior ethmoidal block, with local infiltration for ischemia.

*Septum.* Anterior ethmoidal and sphenopalatine.

*Ethmoid.* The same as for the septum.

*Sphenoid.* The same as for the ethmoid, with topical application of cocain to the sphenoid wall.

*Antrum.* Sphenopalatine block, with anterior palatine and infraorbital blocks as extra precautions. Also infiltration of interlacing fibres from opposite side, made under the upper lip.

Block anesthesia in nasal surgery is bound to become more generally used, and is well worth the extra study it requires on the part of rhinologists. As the title indicates, this paper is limited to the use of block anesthesia in nasal surgery. This does not involve any under-estimation of its value in tonsil and ear surgery, nor to the injection of the Gasserian ganglion in tic douloureux or of the sphenopalatine ganglion, as brought out by Sluder.

Of the number of excellent books on the subject I would personally recommend the following:

Local Anesthesia. By Allen of New Orleans. (Saunders, Philadelphia.)

Text-Book of Local Anesthesia. By Hirschell of Heidelberg. (John Bale, Sons and Danielsson, London.)

Block Anesthesia. By Arthur Smith of Chicago. (Mosby, St. Louis.)

## TREATMENT OF TUBERCULOSIS OF THE SPINE ON THE BENT BRADFORD FRAME

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This series of five cases of tuberculosis of the spine is being reported to call attention to the advantages of the bent Bradford frame over other methods of treatment. This method is not new but does not seem to be used as generally as its merits warrant.

In treating a case of tuberculosis of the spine there are several things we wish to accomplish. First, we wish to reduce or correct the kyphos deformity which is practically always present; we also desire to extend or hyperextend the spine, thus attaining traction and separation of the bony surfaces, which is so desirable in treatment of all joint tuberculosis; lastly, we wish to immobilize the diseased vertebrae as completely as possible. All of these

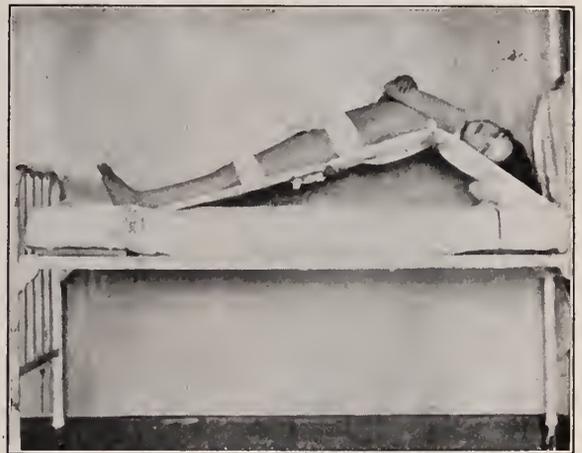


Fig. 1. Showing girl on bent frame with high dorsal lesion.

are attained on the bent frame in a satisfactory manner without discomfort or danger to the patient.

The fixation on the bent frame is continued until all the kyphos has disappeared or until there seems to be no further improvement in the deformity, and also until the x-ray shows a beginning healing process in the diseased vertebral bodies (fig. 1). At this time a cast is applied with the child lying on a canvas hammock. After the cast is applied the patient is allowed to get about gradually. The casts are changed as often as necessary, the progress being watched by lateral x-rays. The entire course of treatment requires from two to four years or longer in some cases.

The fixation operations are rarely resorted to in



Lateral x-rays. Showing deformities present before and after treatment.

2A, 3A, 4A, 5A, before treatment; 2B, 3B, 4B, 5B, after treatment.

children and much less frequently in adults than formerly. In a recent review of cases treated at the Mayo Clinic, Dr. Henderson makes the statement that the tuberculous process does not heal any quicker following the fixation operations than when treated by the nonoperative methods, providing the latter are properly carried out.

The five cases which are being reviewed in this paper entered the Children's Orthopedic Hospital

from eight to ten months ago. They were at first placed upon straight Bradford frames with kyphos pads. As it was impossible to gain any overcorrection of the spine in this way, they were all placed on the bent frames and the improvement can be seen in the accompanying pictures. The dotted lines follow the skin shadow as traced from the x-ray film and indicate the amount of visible deformity before treatment and at the present time.

Following is a review of the individual cases:

Case 3263 (fig. 2) is a girl nine years old with a partial destruction of the seventh, eighth and ninth dorsal vertebrae and a marked angulation. She had a spastic paralysis of the lower extremities, with anesthesia extending to one inch below the umbilicus. On a bent frame the anesthesia and the spasticity gradually disappeared, with a marked improvement in the kyphos and the x-rays show a progressive improvement. This girl was treated for a short time in a plaster of paris shell, during which time the kyphos and paralysis increased.

Case 3341 (fig. 3) is a girl four years old with a marked destruction of the body of the 12th dorsal vertebra, and a moderate kyphos which had been increasing in a plaster jacket which she had been wearing for a number of months before entering the hospital. On the bent frame the kyphos has almost entirely disappeared, with some increase in bone density of the involved vertebra. During the course of the treatment she developed a severe infection of the nose and eyes which cleared up after removing some badly infected tonsils. She also developed a clinical case of diphtheria and had a severe serum reaction from the antitoxin. These infections had no apparent effect on the tuberculous condition.

Case 3444 (fig. 4) is a girl age three with a moderate destruction of the body of the twelfth dorsal vertebra, with a decided prominence at this point. Her convalescence on the bent frame was uneventful except for occasional rises of temperature which to date have not been explained. The kyphos has entirely disappeared. The amount of correction was so much greater than in other cases that it seemed impossible that it could be accomplished without discomfort to the patient, but at no time did she complain.

Case 3262 (fig. 5) is a boy age seven with a slight destruction of the tenth dorsal vertebra and a definite kyphos. This boy was placed on a bent Bradford frame and the deformity has almost entirely disappeared. He developed an infection of the eyes and nose which promptly cleared up after removal of the tonsils. He also developed an effusion in the left pleural cavity which was aspirated several times. His improvement has been entirely satisfactory as far as the tuberculous condition is concerned.

Case 3389 is an Eskimo girl from Alaska, age two, who was brought to the hospital with a destruction of the intervertebral cartilage between the first and second lumbar vertebrae and a slight erosion of the bodies of these vertebrae. She had only a slight kyphos. Due to the fact that it has been very difficult to keep her in position on the bent frame, her progress has been considerably slower than the other cases, but there seems to be some slight improvement.

In addition to these cases there are several others now at the Children's Orthopedic Hospital on the bent Bradford frames. The results have been so satisfactory that it has been adopted almost as a routine method in this hospital.

During the last few years the writer has had several adult cases in his private practice who have been treated in a similar manner and he has been able to correct deformities of moderated de-

grees. When they are able to be up they are fitted with a comfortable brace or jacket of celluloid or leather and allowed to return to their work, providing it is of such a nature that it will not delay the healing process in the spine.

In summarizing, the writer wishes to state that this is a simple, convenient and satisfactory method of immobilizing these cases and of correcting the deformities and at the same time allowing proper hygiene, fresh air, tonics, diet, actinic rays and other methods so necessary in maintaining the general condition of the patient.

## THE TREATMENT OF PSORIASIS

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Until the etiology of psoriasis has been established, its treatment must remain purely empirical, and it is probable that very little improvement can be hoped for. The various theories of localized infection, systemic infection with skin manifestations, endocrine and metabolic disturbances, are championed by some of the most experienced members of the medical profession. It is practically admitted that cure cannot be effected. The lesions usually recur, no matter what method of treatment is employed. The treatment at present practically is confined to the temporary removal of the psoriatic patches. This object can be attained in a fair proportion of cases by a variety of therapeutic measures; the method described in this article has been more successful in a higher percentage of cases than any other tried in this clinic.

The physician is forced to regard each patient with psoriasis as an individual problem. It is not wise to treat the wealthy society woman in the same manner as the laborer. To the former even a few patches may be a source of untold misery. She may not hesitate to spend a reasonable fortune to keep herself free from the eruption. To the latter a fairly extensive involvement may be of little or no significance. There are, however, but few patients with psoriasis who do not feel the necessity periodically to make an effort to rid themselves of the lesions. Such patients at present constitute a practical problem for treatment.

The comparative frequency with which this disease occurs demands that not only the specialist but the general practitioner should be familiar with effective therapeutic measures directed against it.

In the case of the specialist this means varied treatments until he finds the measure, or combination of measures, which answers best in the individual case. The general practitioner too often relies on one or two drugs, and if these do not bring the desired effect, he loses interest. The patient then seeks help elsewhere, often at a considerable distance, and with disproportionate expense.

There is also the type of case which resists most of the recognized forms of treatment. In fact, such a case may make determined therapeutic efforts appear ridiculous. Pusey cites a case in which six doses of emetin, 0.75 grain each, three doses of arsphenamin, simultaneous intramuscular injections of mercury, twenty-five injections of staphylococcus and streptococcus vaccine, Fowler's solution, five injections of autoserum, a seven months' course of nonprotein diet, a few roentgen-ray exposures, removal of the tonsils, and extraction of seven teeth within a period of three years, produced no therapeutic effect. In but few other diseases have so many therapeutic procedures been proclaimed valuable, only to be found wanting when given an extended trial.

Direct exposure to the roentgen ray seemed for a time to promise an ideal method of treatment. Many cases, however, prove resistant to this agent and it is not without decided dangers, except in the hands of the most expert. It has not been universally adopted by specialists in skin diseases.

Brock reported striking results from stimulation doses of roentgen ray to the thymus gland. Several observers reported their inability to duplicate his results, and but little is heard at the present time of this mode of treatment, even in dermatologic circles.

Sabouraud questioned the value of Danysz's treatment by a vaccine obtained from the intestinal flora. Semon, Barber, and Davis also found this treatment of little value except in unusual instances.

The salicylates, intravenously, have been given a fairly extensive trial, and have proved a signal failure. The administration of thymus extract has been advocated by Samberger and others, but has evidently attained but little popularity.

Moore has apparently used collosol manganese with good success, but it has not as yet been subjected to extensive trial. Hübner objects to Bory's sulphur mixture for intramuscular injection because of the pain and fever it engenders, because of the long course of treatment required, and because its

frequent failure necessitates recourse to local treatment in many cases.

Schamberg, who has given the disease much careful study, and other well-known American authorities as well, have expressed themselves as favoring the



Fig. 1. Case of psoriasis before treatment.



Fig. 2. Same case nineteen days after treatment. Dark patches are the result of residual pigmentation.

use of a low protein diet with autoserum, crude coal tar, foreign proteins, and strong and mild chrysarobin ointments applied under impermeable dressings. Alderson favors the use of the ultraviolet quartz lamp.

With such a variegated list of therapeutic measures, it is small wonder that Fordyce thinks it more important to have a committee appointed to standardize the treatment of psoriasis than that of syphilis. Most dermatologists who are regularly treating psoriasis have been hoping for some standard form of treatment. To meet the requirements, it would have to be readily accessible, reasonably cheap, not destructive to clothing, not painful or especially annoying, not dangerous or leave any troublesome aftermath, and would have to induce a rapid and unquestionable response in practically all types of cases. My own quest has constantly been to find such a method. After having tried a large variety of therapeutic procedures, I feel that the method described herewith fairly closely meets the requirements mentioned.

White's crude coal-tar ointment is applied to the patches for twenty-four hours, and removed with olive oil, postponing vigorous cleansing efforts until after the lesions have been exposed to the ultraviolet quartz light. Then only may the patient take a soap and water or oatmeal and soda bath, which, by helping to remove remaining debris, enhances the effect of the tar and light. The light is usually applied for one minute at a distance of 30 inches, and the time of exposure is increased one minute daily for three or four days. If the patient then shows no signs of reactivity, the time is rapidly increased and the distance decreased. An effort is made to avoid any marked reaction, but tanning should be produced as rapidly as possible. If the therapist is thoroughly acquainted with the effectiveness of his lamp and handles it deftly, it should be possible to remove all patches of psoriasis, in practically all cases, in from three to four weeks (figs. 1 and 2). At least my experience in a reasonably large series of cases would warrant this statement.

The tar is less disagreeable than other local applications, especially chrysarobin, and it is neither associated with risk nor followed by unpleasant effects. I have yet to see the most acute type of case irritated by it, or the very indurated plaque fail to respond. The response has been invariably prompt, much to the satisfaction of the patient.

A number of my cases, as well as of others, have proved resistant to the x-ray, but they responded as promptly as any other case in which the combined method was instituted from the beginning. The use of the crude coal-tar preparation alone, or that of the quartz lamp alone, has not given results

in the clinic comparable to the combined use of the two agents. While it is hazardous to venture an explanation, it is difficult to escape the impression that some constituent of the crude coal-tar acts as a sensitizing agent for the light. On this supposition, I tested other agents for their reputed photosensitizing effect, especially rose-bengal and quinin. While the number of cases in which these medications were used has been small, the results were not comparable to those in which crude coal-tar was employed.

There should be little difficulty in making this method of treatment available to most patients with psoriasis. Practically every community now has access to a quartz lamp. The danger from the light is minimal, except to the eyes, and there are few, if any, technical difficulties to be overcome in its use. In exceptional instances, indeed, there is no reason why the patient should not install a lamp for his own personal use, and manipulate it with all the skill required. Should an overdose be accidentally given, nothing worse than a severe sunburn could eventuate. I do not hesitate to cover all the patches, no matter how extensive, with the tar, and I have never seen evidence of irritation of the skin or kidney.

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## HEMORRHAGIC PACHYMEMINGITIS WITH REPORT OF SIX CASES

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### CASE REPORTS

Case 1. Male, age about 60 years, admitted to City Hospital on September 11, 1923. The patient was brought into the hospital in an unconscious condition; had been living at a hotel and had suddenly fallen, apparently in a convulsion.

Examination showed the head retracted; the neck rigid; foul odor to the breath and the mucous membrane of the mouth covered with a sticky secretion. The examination of the chest was negative for abnormalities, as were the abdomen, cardiovascular, genitourinary and glandular examinations. Eyes: Pupils reacted to light and accommodation; right eye rotated downward and inward; left eye was up and out (skew paralysis); a marked nystagmus; the fundus examination was negative. Reflexes: Negative for Babinski; a marked plantar reflex; Kernig positive. The spinal fluid was withdrawn, 21 mm. of mercury; the fluid was stained and it was thought probable at this time that the diagnosis was a skull fracture with a cerebral hemorrhage. Blood pressure 180-85. Cell count of the spinal fluid, however, was 300, mostly polys. Blood count 10,800.

The patient remained in this comatose condition, the lower jaw relaxed, head drawn back, skew paralysis, positive Kernig, until the 22nd day of September, eleven days, when for the first time he began to talk. The skew paralysis remained, but the patient could move the eyes a little. The tendency for both to turn to the left was still present, the lids drooped and the patient was unable to turn the eyes to the right or upward. A right side facial paralysis developed—right facial, right 6th and left 3rd.

The diagnosis of hemorrhage into the cerebellum, due to a fall or causing the fall was now changed to a hemorrhagic pachymeningitis. On the 23rd the spinal pressure was 14, still pink tinted. On the 13th of October examination showed blood pressure 120-85, Wassermann negative, leucocyte count 10,000, otherwise the patient in normal condition. The eyes had cleared; the rigidity and headache had disappeared.

Case 2. Seen with Drs. Fick and Cleaves. Male, age 57 years, admitted to St. Luke's Hospital, Nov. 5, 1923, and discharged on Nov. 26. Gave a history of having a severe headache develop on November 1. It was immediately over the eyes, followed by vomiting; following day it was worse; headache became excruciatingly painful on Saturday and continued through Sunday; on Monday developed phobias and was taken to the hospital.

Examination. Eyes: Pupils contracted, no reaction to light; media clear; discs congested; lateral nystagmus. The reflexes were exaggerated except the plantar reflex. Babinski negative, Kernig 2 plus, neck rigidity 2 plus, heart, lungs, abdomen, genitourinary examinations all negative. The spinal fluid was under pressure of 30 mm., tinted bright pink. Mouth: Mucous membrane covered with sticky secretion; breath very bad. Cell count 750, mostly polys; nonne, Wassermann and culture negative; blood count 4,650,000 reds, 13,000 whites, 85 per cent polys.

On the 6th a skew paralysis of the eyes had developed; the rigidity of the neck had increased;

Kernig had increased. On the 22nd the condition had markedly improved and on the 26th had improved sufficiently for the patient to be discharged. The blood counts were as follows: On the 9th, whites 15,400; on the 10th, 14,000; on the 12th, 19,000; on the 19th, 10,400; on the 23rd, 7,800.

This patient ran a typical septic temperature, ranging from 99° in the morning to 100° and 101° in the afternoon. This temperature persisted until the last week in the hospital, when it gradually dropped subnormal to 98° and remained there until discharged. The pulse and respiration remained about normal throughout the hospital stay.

Case 3. Seen with Dr. Tiffin. Male, age 40 years, admitted to Providence Hospital from Kirkland, January 6, 1924. Chief complaint vertigo and slight nausea; loss of consciousness followed by severe headache. Physical findings: Blood pressure 115-70, pulse 70. Examination of chest: Few moist rales right and left; cystolic murmur in aortic area and at apex, best at apex; slight irregularity of heart rate; heart dullness extended slightly lower than normal; abdomen, genitourinary, bones and joints negative. Reflexes normal, rigidity of the neck. Eyes: Edema of both optic nerves; congestion of the retinal vessels; no hemorrhages; reaction of the pupils normal; no muscle paralysis. Mouth: Teeth in very poor condition; mucous membrane of mouth covered with sticky secretion; breath very foul odor. Spinal fluid pressure 10; the fluid stained pink; the cell count 75. Wassermann negative; nonne negative; urine examination negative; blood count 12,000.

The diagnosis of hemorrhagic pachymeningitis was made. The patient was discharged on January 18, at which time the rigidity of the neck had disappeared; headache had disappeared and the general condition was normal.

Case 4. A colored man, 54 years of age, was admitted to the City Hospital on September 13, 1923, two days after case 1. This patient gave a history of having had a severe headache over the left frontal region, radiating backward on the left side of his head. He had had all his teeth on the right side extracted one month previously; otherwise his history was negative.

Examination: He had an optic neuritis, left eye more marked than the right. Blood pressure 110-60; physical examination otherwise negative except for an increase in his knee kicks. Blood Wassermann was negative. X-ray showed very large sinuses with possibly an enlarged pituitary but no pathology. The spinal fluid was under slight pressure and was stained a deep pink; he had a high cell count, 16,400 white blood cells; Wassermann negative; there was not a cell count made of the spinal fluid. His mouth showed the characteristic sticky, slimy mucus on the mucous membrane; the breath very foul.

He continued with his splitting headache and was delirious at times, but gradually cleared and was discharged on September 29. He has been at Firlands since, doing ordinary work and is apparently completely recovered.

Case 5. Seen with Dr. Hill. Laborer, 47 years of age, was admitted to the Seattle General Hospital on August 23, 1924. He had been found in an isolated place in an unconscious condition and was taken to the City Hospital, later transferred to Seattle General. The following morning he complained of a terrific headache, talked constantly, especially about the pain in his head. Had a marked rigidity of the neck; marked increase of the reflexes; Kernig 3 plus, both right and left; negative Babinski; negative clonus. Spinal fluid taken on the 23rd was blood stained, the pressure was not taken; cell count of the spinal fluid was 70; blood count 15,600.

\* Read before Pierce County Medical Society, Tacoma, Wash., Oct., 1924.

Temperature 98.6°; pulse 60; respiration 22. The mucous membrane of his mouth covered with a sticky secretion, breath foul.

The diagnosis of hemorrhagic pachymeningitis was made and on September 2 the blood count was 13,400. Spinal fluid pressure was 12; spinal fluid was pink tinted; cell count 160, of which 150 were small mononuclears. Two days later the spinal fluid was blood stained amber; the cell count had dropped and the patient's condition was rapidly improving. He is still under observation.

Case 6. A woman, 48 years of age, was admitted to Columbus Sanitarium on September 7, 1924. She had fainted the day before and the condition was supposed to be one of apoplexy. She had a blood pressure of 190-90; a white cell count of 30,000, 95 per cent polys and 5 monos. Her mouth showed the characteristic sticky secretion and the breath was foul.

I saw this woman in consultation with Dr. Kelton on September 11. Her blood count had dropped to 18,500, of which 93 per cent were polys and 7 per cent monos. She had diplopia due to a paresis of the right external rectus muscle; a 2 plus rigidity of the neck; a 1 plus Kernig; otherwise her examination was negative. She complained of constant and severe headache in the frontal region, radiating backward. The spinal fluid pressure was 32; the fluid was of a reddish color, as in a case of free hemorrhage. The cell count was 1,000,000 reds and 200 whites; the whites showed 60 polys and 40 monos. Wassermann 4 plus. The diagnosis of hemorrhagic pachymeningitis was made from the above picture.

These six cases had as their chief symptom a severe, excruciating headache. They all had a rigid neck, positive Kernig, typical picture of meningitis. The mouth and teeth were in very bad shape in each case. The spinal fluid was under an average pressure of 15 mm., tinted pink; cell count ranging from 300 to 700 in each case, mostly polys; blood count average 15,000. The onset in each case was sudden; the skew paralysis developed in two of the six cases. Undoubtedly the condition was one due to a low-grade infection of the meninges, associated probably with petechial hemorrhages of the membranes themselves. The tinted spinal fluid would indicate that the hemorrhage was subarachnoid in location.

The various theories regarding the cause of hemorrhagic pachymeningitis may be outlined as follows: Prior to 1850 most pathologists held that the condition was due to trauma. It was thought that the hemorrhage was the result of hemorrhage at the time of birth and that the organization of the primary hemorrhagic effusion caused the condition. In 1854 Virchow advanced the primary inflammation theory.

Burhans and Gerstenberger<sup>1</sup> quote Wohlwill as follows: "It is a primary proliferation of the sub-endothelial tissue, probably following a previous lesion of the endothelium. Fibrinous and serous exudations as well as hemorrhage are only accidental

processes. In no case does the histology of the membrane show that it originates from an organization of a primary hemorrhagic effusion." Further, quoting Marie, Roussy, Laroche and others as opposed to the primary hemorrhage theory.

Griffith<sup>2</sup> is inclined to the latter theory, that pachymeningitis is a primary lesion. Schwartz<sup>3</sup> believes that in children the condition is due to infection. Various authors attribute the lesion as associated with syphilis, hemorrhagic diathesis, pertussis, alcoholism, general paralysis, arteriosclerosis, lead poisoning and tuberculosis.

*Pathology.* Griffith.<sup>2</sup> "Three types are noted, first, primary subdural hemorrhage without inflammation; second, pachymeningitis cases with little effusion of blood; third, mixed cases, in many cases which seem to be hemorrhagic, the early traces of inflammation have been obliterated. In early inflammatory cases there is a very delicate, highly vascular, easily removable soft membrane on the inner surface of the dura. It is most often over the convexity of the hemispheres on one or both sides, sometimes at the base. Scattered, punctuate hemorrhages are found, but when hemorrhage constitutes the main lesion, there is 'hematoma of the dura.' Little or no trace of false membrane may be discoverable. Later, the effused blood clots and partially organizes and still later is absorbed and leaves cysts. The membrane may thicken into several layers and become more adherent to the dura or may even bind it to the pia."

According to Dunn,<sup>4</sup> "All three membranes including brain tissue are involved (Hassin). Grossly there are deposits of more or less transparent detachable membrane, stained red, brown or reddish brown by blood pigment found on the inner surface of the dura, especially on the convexities."

According to Burhans and Gerstenberger, "Proliferation of the endothelial layer on the inner surface of the dura is the first change. Soon a few leucocytes and some fibrin may be present; later, fibroblasts and new capillaries grow out from the subendothelial layer which is very vascular. The capillaries, being thin walled, are easily ruptured. The hemorrhages may be minute and if so are soon reabsorbed, but if they recur, the membrane in time attains considerable thickness. When hemorrhage is more extensive, the membrane is pushed away from the dura and, as cellular elements are digested, there remains a cyst containing a yellow fluid. A new membrane then forms on the dura, and, if the process is repeated, there results a

lamellated structure between the layers of which are collections of blood in various stages of resorption. The site of this process is most often the mid portion of the convexity and it is usually bilateral."

*Symptomatology.* The symptoms in children are quite different from those in adults. Griffith<sup>2</sup> states clearly the symptoms in children as follows: "No characteristic symptoms and often unrecognized, especially in marantic infants. Symptoms usually depend on the hemorrhage, rather than the inflammatory process. Vomiting, headache, convulsions, unconsciousness and later indications of compression, such as bulging of the fontanelles, slowness and irregularity of the pulse and respiration, choked disc, stupor, convulsions and coma. Fever may be early or late or absent. Cases of long duration with cystic degeneration have enlarged heads. Evidence of paralysis and rigidity may appear."

Fried<sup>5</sup> states the onset is always sudden and in adults it is accompanied by severe almost unbearable headache, usually located in the occipital and basal region and in the neck. Vomiting, rise in temperature, convulsions, a relatively slow pulse rate and more or less stupor. Evidences of meningeal and spinal nerve root irritation soon develop. These include hyperesthesia, deep muscle tenderness, tenderness along the spine, muscular rigidity and Kernig's sign. He states further that probably the most important diagnostic sign is bloody spinal fluid, containing well formed red blood cells giving negative smears and sterile cultures, together with a strong albumin and globulin reaction. A striking feature of the disease is the reappearance of fresh blood in the spinal fluid, following every insult or exacerbation of symptoms, such as headaches and convulsions. This phenomenon is peculiar to the disease.

#### RESUME

From the six cases cited it would appear that in acute hemorrhagic pachymeningitis the onset is sudden, usually a severe headache, often sufficiently great to cause loss of consciousness. The condition is due to an infection and in four of these cases the aetrium of infection was the teeth. Probably proliferation had occurred prior to the onset of the symptoms, the latter being due to an acute hemorrhagic condition. The last case was syphilitic. The cellular element of the spinal fluid would indicate an inflammatory condition rather than a simple extravasation of fluid.

The diagnosis can be made from the sudden onset,

the severe pain in the head, the rigidity of the neck, the positive Kernig, the tinted spinal fluid under pressure with a high cell count, the blood count being above 15,000, and the ocular signs. A skew paralysis suggests always a cerebellar hemorrhage. This occurred in two of the six cases. The other signs of cerebellar hemorrhage, however, were negative, so that probably the ocular palsies were due to cortical and basilar irritation rather than cerebellar.

*Differential Diagnosis.* The important thing in this type of cases is to make an accurate diagnosis, as the treatment is quite different in the various conditions which may be confused with this. We have to consider first of all cerebral hemorrhages. Apoplexy, as a rule, comes on suddenly and in patients past mid-life; they may or may not lose consciousness; headache is not a predominating symptom; the leucocyte count is not so high and there is usually a definite paraplegia or hemiplegia.

In younger patients, especially infants, anterior poliomyelitis, epidemic cerebrospinal meningitis, and, of course, encephalitis of the acute type must be considered. In adults acute encephalitis, perhaps, is more frequently confused with this condition. As a general rule, one might say that all of these infections with sudden onset and with signs of meningitis, rigid neck, the positive Kernig, fall into the general class of meningitis. If coma comes on within twelve hours and a cloudy spinal fluid under at least 12 mm. of pressure, the condition is likely to point to epidemic cerebrospinal meningitis. Usually in these cases the organism is found rather early and easily in the spinal fluid cells.

Stone estimates that approximately 40 per cent of all meningococcic cases develop petechial hemorrhages in the skin. This, of course, is at the time of the meningococcemia. This also aids in the differential diagnosis. If, however, the onset is sudden, the rigidity of the neck is marked, the cerebrospinal fluid is clear or relatively clear and under a pressure of 20 mm. of mercury, but the patient remains conscious, one should then think more of encephalitis or anterior poliomyelitis during the first twenty-four or forty-eight hours.

Usually at the end of forty-eight hours the case is clarified either by the development of coma and a true meningitis, or the development of the isolated paralysis, either of the larynx, palate, arms, legs or diaphragm. Then, of course, the diagnosis is clinched. With either of the above group of symptoms, plus a bloody spinal fluid and a high leu-

cocyte count, one is justified in considering the case one of hemorrhagic pachymeningitis. The important factor, however, in such a diagnosis is to be sure that there is a lysis of the spinal fluid and not a contamination of the fluid at the time of spinal puncture. The diagnosis then resolves itself into the presence of definite meningitis symptoms and definite spinal fluid findings and one cannot make a differential diagnosis without considering both angles.

The treatment consists of rest, control of pain with morphine, relief of spinal fluid pressure with intravenous salt injections and administrations of urotropin.

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### THE DIAGNOSIS AND TREATMENT OF PEPTIC ULCER\*

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In this paper it is my purpose to discuss the simple noncancerous, round and perforating ulcer of the stomach and duodenum. Fundamentally they are alike, but such differences as exist are due very largely to the complications peculiar to the stomach or duodenal location of the ulcer. They are usually called peptic or digestive ulcers.

A few introductory statements would be proper in regard to the etiology of peptic ulcers. Two factors are evident, according to Sippy, in the production of ulcer: "(1). Circumscribed malnutrition or necrosis, involving the mucous membrane or walls of the stomach and that portion of the duodenum subjected to the digestive action of the gastric juice. (2). The digestive action of the gastric juice."

Rosenow discovered through animal experimentation that "streptococci irrespective of their source, when of a certain grade of virulence, exhibit an affinity for the gastric mucous membrane. When

injected intravenously, ulcer of the stomach and duodenum may follow." His conclusions were that "the ulceration is due to localized infection and secondary digestion." Clinicians have recognized a close relationship between focal infections and peptic ulcers.

As to location, it may be briefly stated that 95 per cent of the duodenal ulcers are located within one and one-half inches of the pyloric orifice. In this portion of the duodenum the gastric content is retained longer than any other. Mayo says "only within this neutralizing field of the duodenum can an ulcer occur."

Seventy-five per cent of the stomach ulcers involve the lesser curvature and posterior wall, and are nearer the pyloric rather than the cardiac orifice. They may be single or multiple and vary in size from that of a pinhead to large ulcerated surfaces. When the peritoneal coat is not involved, they may be overlooked at operation.

The diagnosis of peptic ulcer without obstruction is made upon a history of pain, often coming in attacks which may be burning, gnawing, boring, aching, cutting, tearing, or cramp-like in character. Except when perforation takes place, the pain is seldom severe enough to require morphine. The tenderness is usually localized over a small place in the midline midway between the umbilicus and the ensiform cartilage. It often radiates to the back.

For an abdominal pain to be compatible with ulcer it must comply with the following conditions:

1. The pain is absent when the stomach is empty or if it contains less than 50 c.c.
2. There is usually an interval of one to three hours after each meal, during which time the patient is free from distress. As a rule the larger the meal the longer the interval.
3. When the distress attributable to ulcer is present, the patient is relieved by the ingestion of a therapeutic meal, usually consisting of two cold hard boiled eggs, a cold baked potato, two glasses of milk and two or three slices of bread with butter. This is served cold because, if a bowel distress were present, a hot meal might give relief and thus confuse.
4. The pain of ulcer must be relieved by alkalis, for example calcined magnesia (heavy oxide) and sodium bicarbonate, each gr. xxx.
5. The patient is relieved of ulcer distress, if the stomach is aspirated and the stomach washed until

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there is no free acid. Usually the aspirated material is of a higher acidity than that obtained by the Ewald.

Sometimes there is a loss of weight from an inadequate amount of food because many patients are afraid to eat. The laboratory findings will be discussed in another paragraph.

Obstruction at the outlet is due usually to a narrowing of the duodenal lumen or pyloric ring from old ulcer scars, from an inflammatory process associated with an ulcer at the outlet, or a malignancy in this location. The evidence of obstruction at the outlet is as follows: There are often succussion sounds, elicited by gently tapping the abdomen over the stomach. Sometimes peristaltic waves are seen going from left to right over the stomach. If the patient is given a dram of tartaric acid in two-thirds of a glass of water, followed by a similar amount of bicarbonate of soda, the stomach becomes distended with gas, due to the formation of carbon dioxide and the peristaltic waves are seen more clearly. The stomach outline may be percussed. If there is a palpable tumor at the pylorus, whether of inflammatory or malignant origin, it is usually displaced to the right and downward upon distention. In a marked obstruction, drowsiness and vomiting with a history of little pain may be the chief complaint of the patient. The amount vomited may be more than the intake because the body fluids are poured into the stomach as a transudate. The free hydrochloric content may be relatively low. These patients decline rapidly and may become unconscious and die from dehydration, unless suitable measures are taken.

When a patient who has been in good health vomits a large quantity of bright red blood, or if he suddenly becomes ashy pale, has weak pulse and has blood in the stool, that patient should be treated on the assumption that he has an ulcer. No stomach tube is passed or any x-ray work done in these cases until the hemorrhage is stopped. Penetrating ulcers are more painful at the height of the distress than the usual clinical ulcer. In the differential diagnosis carcinoma of the stomach must be considered. It occurs usually in older individuals, associated with loss of weight and strength, often a palpable tumor mass in the epigastrium, vomiting, edema of ankles and occasionally by the presence of the sentinel lymph gland above the sternal end of the clavicle to the left of the midline. The pain may come on suddenly or insidiously, and has no relationship to food taking. The pain often

requires morphine. In an early suspicious case a laparotomy is justifiable, so that the proper surgical treatment may be instituted.

In gallbladder disease, alkalis, ingestion of food, and the test enema does not relieve the distress. There is a slight rise in temperature, about  $100^{\circ}$ , associated with a slight leucocytosis. The gallbladder pain has a much greater field of radiation than the peptic ulcer and there is often difficulty in breathing, due to spasm of the diaphragm.

The distress from an irritable colon usually comes on immediately after eating, but may come on at any time. In character it is cramp-like, or there may be a soreness over the colon. The distress is a shifting one, but there is usually some portion that is the seat of an attack, namely, the sigmoid, transverse colon or the cecum. The bowel distress is relieved partially or completely by heat, also by a test enema. There is usually a history of an indiscretion in eating over a period of months or an abuse of cathartics. The patient usually knows what type of food will bring on an attack. The distress is reproduced by the giving of a barium enema and the patient locates the places of distress under the fluoroscope.

In chronic appendicitis we may have a reflex nausea and vomiting with motor and secretory stomach disturbance. Vaginal or rectal examination may aid. Positive x-ray evidence is important. Only after exclusion of other things, bearing in mind an irritable colon, should we consider chronic appendicitis as the cause of the gastric disturbance.

Harris reports a number of cases, where there is a congenital band across the duodenum producing obstruction. Its presence is found by exploration and relief is afforded by its removal.

The laboratory evidence in the diagnosis of peptic ulcer must now be considered. The aspirated Ewald test breakfast in ulcer has usually a high free and high combined hydrochloric acid content. In the obstructive type sarcinae are often present. In the nonobstructive cases a motor meal is passed in six to seven hours, leaving the stomach empty. There may be retention in a normal stomach, if the patient is nauseated, has a migraine headache or is unduly nervous. In the marked obstructive cases there may be 500 to 1500 c.c. retention at the end of seven hours after the ingestion of the meal.

In carcinoma there is usually blood, no free acid, though occasionally there is a low free acid content. Oppler Boas bacilli and lactic acid are often found, where there is obstruction at the outlet. The milk

curdling ferments are present in dilutions as low as 1-320.

The examination of the stool is very valuable in gastrointestinal diagnosis. In this discussion we are concerned about the presence or absence of blood. The patient must be on a meat-free diet except white meat or chicken or white fish. Also, the diet should be so regulated that the stool is well-formed, and there must be no bleeding from the gums or nasal passages. One and one-half cubic centimeters of blood ingested per day with a meat-free diet will give a positive benzidine test for blood in the stool. One must be on the alert for occult blood. Sometimes blood is found in the central portion of the stool, whereas none is found exteriorly. Stomach or duodenal bleeding usually cannot be discerned microscopically in the stool, unless there is a copious hemorrhage, and then verification should be made by the benzidine test. This chemical test for blood is far more sensitive than the Weber and more expediently made.

I believe that x-ray evidence in the diagnosis of ulcer should be obtained last, for the reason that the physician under whom the patient places himself should obtain all the clinical evidence possible and take that evidence with the patient to the x-ray man. By close cooperation in this way the patient's physician assumes part of the responsibility instead of the x-ray man carrying the entire burden.

The radiologic evidence of gastric ulcer according to Carman is as follows:

- "1. Visualization of bismuth-filled crater of a callous ulcer.
- "2. The incisura, or transverse contracture, indenting the greater curvature.
- "3. Diverticulum of perforating ulcer.
- "4. Residue after six hours.
- "5. Delayed opening of the pylorus.
- "6. Acute fish-hook form of the stomach, with displacement to the left and down.
- "7. Localized pressure tender point on lesser curvature.
- "8. The settling of the bismuth to the lower pole of the stomach, such as is seen in hypotonicity or atony."

Carman gives the following as evidence of duodenal ulcer:

- "1. Irregular outline of the cap or duodenum.
- "2. Dilatation of the cap.

"3. Early, free opening of the pylorus, with early clearing of the stomach.

"4. Lagging of bismuth in the duodenum.

"5. Residue in the stomach after six hours.

"6. Pressure tender point over the duodenum.

"7. Diverticulum of a perforating ulcer.

"8. Vigorous peristalsis especially if there is obstruction."

Cole has shown the importance of taking serial x-ray plates to make a diagnosis of peptic ulcer. There is little distinctive about blood findings associated with peptic ulcer. Immediately following a profuse hemorrhage there is practically no change in the hemoglobin and cell count. A moderate leukocytosis first appears, then the hemoglobin and number of red cells rapidly decrease, as the under-filled blood vessels absorb fluids from the tissues of the body. In a few days the hemoglobin and red count reach the low level. In repeated hemorrhages the hemoglobin may be reduced to 20 per cent or less, and a color index as low as 0.4. A change in the staining, form and size of the red cells may be noted and nucleated reds may be seen.

When perforation of a peptic takes place, the pain has a sudden onset, rapidly becoming worse to the point of excruciation and collapse. The abdomen has a typical board-like rigidity. The blood picture is usually unchanged. In an early perforation the temperature may be normal. Though there is gastric content in the abdominal cavity, yet its presence cannot be proven until a laparotomy is made. Usually gas can be demonstrated by x-ray in the abdominal cavity between the liver and diaphragm, but this information is of little practical value, and delays the operative procedure.

Acute pancreatitis manifests itself by the sudden onset of acute excruciating epigastric pain. It is usually accompanied by nausea, vomiting, constipation, collapse and abdominal distention. It stimulates acute intestinal obstruction or acute generalized peritonitis.

A typical gastric crisis of tabes begins without any warning, and with unusually violent pains in the epigastrium of a tearing, jumping or boring nature. Almost simultaneously the patient suffers with an uncontrollable vomiting. The vomitus is usually of low acidity. The patients have the usual ear marks of syphilis, and give a history of having attacks every few weeks or months. One man drifted into the Presbyterian Hospital in Chicago

for antisyphilitic therapy who had had three exploratory laparotomies. He had recently come from the Mayo clinic, and there the proper diagnosis was made. The three last named conditions are the most painful of abdominal pathology.

The treatment of peptic ulcer varies according to the problems presented by each patient. Before any active treatment is started the general condition of the patient should be improved by removing all sources of focal infection, such as infected teeth and tonsils, and by sinus drainage.

First I will discuss the medical management of peptic ulcer, as advocated by Sippy of Chicago. It is best to have the patient in the hospital for a month, provided the hospital cooperates as it should in carrying out the details of the management. The first three weeks the diet is such that if the patient is quiet he does not lose weight. During the fourth week he continues his management as he does outside the hospital. The details are as follows:

First week. (1). Milk and cream, one and one-half ounces of each every hour from 7 a.m. to 7 p.m. (2). Powders every hour from 7:30 a.m. to 7:30 p.m. and also 8 p.m., 8:30 p.m. and 9 p.m. (3). After the first day a cereal or an egg is added daily, so that by the end of the week the patient is getting three eggs and three cereals, one or the other every two hours. Eggs may be poached, boiled, scrambled or may be in a custard.

Second week. (1). Milk and cream as in the first week. (2). Three eggs and three cereals. (3). Toast three to six pieces daily, with three feedings of marmalade or jelly. (4). Powders as in the first week.

Third week. Management is the same as the second.

During the fourth week the patient starts eating three small meals, the volume of each not to exceed fifteen ounces, excluding water, tea, coffee and thin soups. The daily routine during the fourth week is as outlined. After the small breakfast of ten or fifteen ounces a powder is taken every half hour for two doses, or three doses, if a fifteen ounce meal has been taken. One-half hour after the last of these two or three powders three ounces milk and cream are taken. The next half hour a powder. In that manner the milk and cream are alternated until the noon meal. After noon meal, a powder every half hour for three doses is taken, followed by milk and cream and the powders as in the forenoon, one or the other each half hour

until time for the small supper. The supper should be the smallest meal. The total bulk should not be more than eight or ten ounces. After supper a powder is taken each half hour until the stomach is aspirated, thus reducing the food and secretion and thereby reducing the tendency to the production of an excessive quantity of harmful night secretion.

It is permissible occasionally to take an ordinary full meal, or once in a while three full meals may be taken for a couple of days. In such case a powder is taken every half hour for six doses or a double powder every hour for three doses after the meal. At the end of five or six weeks of management with three small meals, powders, and milk and cream, the treatment is stopped for five days except the diet and then resumed for five or six weeks again. Thus it is continued for a year with the five or six weeks intensive treatment, followed by the five day intermission.

The powders given in ulcer cases are of two kinds. No. one powder consists of calc. carb. gr. x and sod. bicarb. gr. xxx, and is given on the odd hour, 7:30 a.m. to 7:30 p.m., 8, 8:30 and 9 p.m. No. two powder, calc. mag. and sod. bicarb., each gr. x on the even hours, 7:30 a.m. to 7:30 p.m. No. two powder is laxative and the number used determined by the character of the stools. No. one is substituted when powder No. two is not used.

Aspirations during the first three weeks of management are made two days a week at 4:30 p.m., and only a sample taken, and three days a week the stomach is emptied at 9:30 p.m.

During the fourth week the afternoon aspiration is made at 2 p.m. instead of 4:30 p.m. and at home these are made occasionally.

The above management is usually sufficient for the nonobstructive type of ulcer. In case the acid is not controlled during the day, then additions are made to each powder. First five grains of calc. carb. or sod. bicarb. at a time until the acid is controlled.

In the obstructive type of ulcer 80-85 per cent, according to Sippy, are relieved of their obstructive symptoms in three to four weeks of strict ulcer management. The obstructive ulcers require evening powders and oftentimes midnight aspiration to relieve the patient of the night secretion.

Those patients with obstruction that do not respond to medical management have the choice of emptying the stomach every night or submitting to a gastroenterostomy. In the obstructive case, characterized by marked vomiting and dehydration,

emergency measures should be taken. These patients should have the body filled with fluids by the intravenous and rectal methods. The stomach should be emptied every four hours, so it does not become dilated and atonic. The intake must exceed the output. If the patient has been started on ulcer management he should be immediately put on a diet of three meals a day and when in proper physical condition a gastroenterostomy done. This type often becomes dehydrated after the operation.

A bleeding ulcer should be treated medically. If severe, as follows:

1. Calcium carbonate dram I every hour, day and night for the first 24-36 hours.
2. Elevate foot of bed.
3. Ice coil to abdomen.
4. Absolute rest.
5. Morphine sulphate grain one-fourth often enough to keep the patient drowsy.

Usually on the second day the calcium carbonate is reduced to grains xxx every hour and dram I every hour during the night. Milk and cream every hour is started on the second or third day. After three days the night powders are given every two hours, and in about a week the usual powders. The chemical examination of the blood should be made frequently during the time that the patient is receiving large amounts of alkalis.

After the patient has been on management two or three weeks and no blood is present in the stool, then stomach analysis and x-ray examination may be made, and the treatment suitable for the case instituted.

The treatment of a perforated peptic ulcer is surgical. The opening is closed and, if there is danger of obstruction from the scar, a gastroenterostomy is advisable.

In conclusion, let me emphasize the importance of getting a good history and keeping the patient under observation until all the evidence is at hand before a diagnosis of peptic ulcer is made. Furthermore, let me stress the importance of offering the patient the best treatment for his type of case. In the treatment of ulcer we should be conservative when possible, because the work of unsatisfactory radical procedures cannot usually be rectified with success.

## RECENT ADVANCES IN THE DIAGNOSIS AND TREATMENT OF FEMALE STERILITY

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A great deal of research work has been done in the last few years with the idea of improving our knowledge of the treatment of sterility. This work has been prompted largely by the fact that there are so many sterile matings in the United States. One in every ten marriages is a barren union. It has been estimated that there are two million sterile couples in this country at the present time. Often the greatest regret in a man's or woman's life is the fact that they have no children. Of equal importance is the decrease in our native-born population. This decrease is said to be steadily growing. The subject, therefore, is of a great deal of importance and deserves careful study by all who have to deal with this problem.

Female sterility may be classified as follows: (1) Primary, when a woman living in normal sexual relations has never conceived. It is customary to refer to primary sterility when a union has remained unfruitful for three years or longer. (2) Secondary sterility occurs when a woman becomes sterile from acquired causes after having previously conceived—the so-called one child sterility. This is often the result of infections after labor, or occurs in a woman who was healthy at the time of marriage but later contracts a venereal infection from her husband. (a) Sterility is said to be absolute when the cause cannot be removed. (b) Sterility is relative when due to infertility on the part of the male or to a condition of the female which can be corrected.

Nearly always the unhappy wife in a barren mating is blamed for the sterility. The husband is reluctant to shoulder the responsibility. He sometimes resents the inference that he might be the one at fault and may balk at investigation. Yet statistics according to Meaker, McComber, Hunner and others show that 20 to 50 per cent of sterility is due to infertility of the male. It is important, therefore, to bear in mind that the male is very often at fault and it should be our first duty in the study of a case of sterility to find out whether or not the male partner is fertile.

A review of the normal mechanism concerned in

fertilization will be advantageous. The seminal pool is normally deposited so as to be in relation to the external os. Suction by the cervix takes place, as the spermatazoa are to be found in the cervical canal immediately after intercourse, if examination of the cervical mucus is made. During intercourse the cervical mucosa pours out an alkaline mucous secretion which not only tends to neutralize the acid vaginal secretion but offers ropes of mucus as a pathway for the sperms to travel upward toward the fundus. There is thought to be an increase in the endometrial secretion. The sperm passes on to the fundus, having been found in the cervix and fundus six days after coitus.

Inasmuch as the union of the spermatazoa and the ovum normally takes place in the outer part of the fallopian tube, the sperm must be able to make its way to this point unobstructed. Likewise a healthy ovum must be produced which should have a free passageway and be capable of passing through the fallopian tube from the ovary to the uterus. Lastly, this ovum must find an endometrium suitable for its implantation and development. It will be seen, then, that there are three important essentials concerned in sterility. First, there must be healthy spermatazoa; second, there must be a healthy ovum and; third, there must be a healthy patent canal from the vaginal orifice to the ovary. The fertilized seed must have suitable soil in which to grow.

To determine the cause of female sterility may in some be a simple matter, while in others it is a complex problem. The analysis of a large number of cases is perhaps of some value. Guy Hunner, in a study of 526 instances, made the following observations regarding the etiology: Cervical discharge 33 per cent, acid cervical leucorrhoea 14 per cent, pelvic infections 15 per cent, retrodisplacements 14 per cent, cervical stenosis 10 per cent, amenorrhoea 7 per cent, developmental abnormalities 8 per cent, painful intercourse 5 per cent, uterine fibroids 5 per cent, no cause found 8 per cent.

In 279 patients examined, out of 526, the husband was found to be sterile in 56 or 20 per cent. McComber in a study of 337 instances classifies his findings differently. Under what he calls functional classification he found that inflammatory conditions caused 30 per cent, congestive conditions 23 per cent, developmental errors 24 per cent, ovarian disorders 23 per cent.

In summarizing he gives the following figures: Male sterility caused 50 per cent. Female sterility was analyzed as follows: Pathologic conditions

caused 50 per cent, of which 25 per cent were due to closed fallopian tubes and 25 per cent were due to chronic congestion in some part of the tract. The other 50 per cent showed 25 per cent due to faulty development and the other 25 per cent to ovarian disorders.

He also analyzes one-child sterilities in 76 patients. His findings differ here, in that there were no developmental disorders, but he found 55 per cent due to congestive conditions, whereas in primary sterility only 25 per cent were due to this cause. The increase in this class he found to be due to lacerations, subinvolution and relaxed pelvic supports.

If you will consult any standard text-book on gynecology, you will find given as a cause of female sterility practically everything from elephantiasis of the labia to carcinoma of the ovary. There is such an array of causes given that in the study of a patient the physician may become confused, and his attention directed to some one condition which may only have slight bearing on the cause, if any at all, and the real trouble be overlooked. Among the numerous etiologic factors given there are certain causes worthy of emphasis and discussion.

Infection and its results stand first and foremost as a cause. Particularly is this true, when it affects the cervix causing endocervicitis. Inflammation changes the normal alkaline cervical mucus to a purulent discharge which blocks the way. Not only does this discharge block the way but it has a toxic effect on the gonads and they die quickly, when they come in contact with this purulent matter.

It is not unusual to find cervical strictures, particularly at the internal os, and there is practically always an associated endocervicitis. The stricture is the result of long standing inflammation. Chronic infections at the vaginal orifice affect the Bartholin glands and Skene's ducts. Curtis believes that chronic infections at these points are of great importance, in that they act as constant foci to infections higher up in the genital tract.

Infections of the fallopian tubes cause distortion, adhesions and closure. Infections of the ovary interfere with its function by thickening of the capsule or enveloping adhesions, preventing the normal rupture of the Graafian follicles and the escape of the ovum. The type of organism producing the infection we are not always able to determine, but undoubtedly gonorrhoea plays an important role in that it has a predilection for mucous surfaces and

is prone to produce destruction of mucous surfaces with resulting adhesions.

Another important cause is ovarian dysfunction, whether due to faulty development, infections or constitutional disorders, such as syphilis, obesity or chronic alcoholism.

Displacements of the uterus seem to exert some causative influence, particularly ante flexion. Here we often find an associated underdevelopment of the uterine body with a sharp angle of flexion of the cervix at the internal os, displacing the external os up under the symphysis. There is frequently an associated passive congestion of the endocervix with a secondary endocervicitis complicating. This condition is not only a developmental fault but a mechanical error as well.

Fibroids and polypi act as a cause, when they interfere mechanically with the lumen of this tract.

Unusually acid vaginal secretion is practically always given as an important cause. Inasmuch as the vaginal secretion is normally acid, there has always been a question in my mind as to whether the fault does not lie in the fact that the cervical secretion is changed and becomes hostile. It has been quite definitely proven that the normal vaginal secretion kills the spermatazoa in from one to two hours.

Faulty development may be responsible in a number of ways, as the short anterior vaginal wall, the underdeveloped cervix and uterine body; diverticula and kinks, with arrested development of the fallopian tubes; the hypoplastic or underdeveloped ovary. Fetalism is purposely not discussed.

It is interesting to note the work of Reynolds and McComber. They have experimented extensively with rats, using diets deficient in certain elements. The results show that a diet deficient in calcium influences the fertility of the individual. Rats previously fertile become sterile. The calcium restored to their diet makes them again fertile. During the recent war, when some elements of food were scarce in Europe, it was noted that there was a tendency for many women to be sterile. A properly balanced diet is significant and we should be on the lookout for signs of malnutrition.

Reynolds and McComber have also shown that there is a wide range of difference in the degree of fertility of rats, some being highly fertile, while others are of low or medium degree. If a mating of two of low fertility occurs, conception is not likely to take place, while if one of high fertility is mated to one of low fertility conception often

takes place. It must be admitted that there is a wide range of difference between the laboratory rat and the human being, but there are numerous examples of degrees of fertility in men and women to bear out their conclusions. Couples have separated, each remarried and each has had children by a new mate.

Obesity has long been known to be associated with sterility. It may or may not be secondary to an endocrine disturbance. Endocrinologists have reported numbers of cases of obesity, due to thyroid and pituitary disturbances, which were not only sterile, but had amenorrhea and, when by proper treatment the weight was reduced, menstruation was again established and in some cases pregnancy occurred. Obesity is not always an endocrine disorder and can often be overcome by proper diet. Many cases of sterility have been reported cured by the reduction of weight to normal with no other treatment for sterility, conception taking place shortly after the normal weight was attained.

Temperamental incompatibility acts as a factor in influencing the cervical and vaginal secretions. A woman's receptiveness stimulates a greater flow of alkaline cervical secretion which neutralizes the acid vaginal mucus and thereby acts to preserve the life of the spermatazoa. Sexual indulgence at too frequent intervals is thought to be detrimental, in that there are produced spermatazoa of low vitality. McComber states that chronic congestion of the cervix also results from excessive coitus. Cervical congestion, he thinks, is a frequent cause of sterility.

Incompatibility between certain uterine secretions and spermatazoa may account for many unexplainable childless unions. It is possible that there is the same enmity here as found when typing the blood of different persons. Van der Dyck found that the serum of sterile females belongs to a group which agglutinates the erythrocytes of all other groups and believes that the property of agglutination bears a direct relationship to sterility.

Stapler reported fourteen cases in which pregnancy followed tonsillectomy in previously sterile young women. In all these patients the tonsils were infected and there was an associated menstrual irregularity. He believes because of the more or less direct connection of the tonsil to the hypophyseal and thyroid glands, that the tonsil has an endocrine effect on gonad secretion and sex functioning in both male and female.

Dyspareunia or painful intercourse as well as

vaginismus, if they prevent intercourse, are so apparent as causes that they hardly call for more than mention.

#### DIAGNOSIS

In considering the diagnosis of sterility one should follow a definite plan. It is quite as important to be able to tell the patient that conception is impossible as it is to do otherwise. With this knowledge they may reconcile themselves to their fate and perhaps adopt a child to take the place of their own. A complete history should be taken and in addition to other questions we should inquire into whether the patient has had symptoms of gonorrhoea or postabortal infections. A carefully taken menstrual history gives us some idea of the function of the ovary.

Physical examination should be complete. One should search for foci of infection, anemia, malnutrition or endocrine disturbance. The weight should be observed and the general development as regards secondary sex characteristics. Pelvic examination will reveal any gross abnormalities. Vaginal examination should include the inspection and stripping of Skene's ducts, examination of Bartholin's glands, the vagina and cervix. The reaction of vaginal and cervical secretions should be ascertained. The position of the cervix, its size and shape, the type of opening of the external os, the presence of endocervicitis must all be determined. Particular attention should be paid to presence of a cervical plug of mucus and the presence or absence of cervical stricture. Bimanual examination determines the position of the uterus, its shape, size, consistency and mobility. The presence of growths is ascertained. The fallopian tubes are next examined as to abnormalities and bimanual palpation of the ovaries reveals their condition.

Presuming that we have found no absolute barrier to conception, it is our next duty to find out whether or not the male is fertile. The method of Huhner is now quite generally accepted. The cervical mucus is secured within one to two hours after intercourse by the use of a pipette inserted into the cervical canal and examined microscopically for living motile spermatazoa. This secretion is diluted with a few drops of warm saline solution and should show four to sixteen motile spermatazoa to a field. Vaginal examination of secretion cannot be relied on. If the sperm is found in the cervical secretion as stated above, the male may be classed as normal. Should none be found a condom specimen examined within two hours and kept at body

heat will conclusively show the presence or absence of living motile spermatazoa in sufficient numbers. Should none be found, the examination should be repeated after a few days, thus proving the male may be sterile. If the condom specimen yields normal spermatazoa, we must look to the female for the cause of our trouble. I have never looked for spermatazoa in the fundus, as has been suggested by one writer.

If no abnormality is found in the genital tract of the female, our next problem is to ascertain whether or not the fallopian tubes are open. In 1919 an ingenious investigator by the name of Rubin perfected an apparatus for forcing gas through the uterus and fallopian tubes to determine whether or not the tubes were patent. Oxygen was first used, later carbon dioxide, as it was found that oxygen was slowly absorbed and caused considerable pain. Carbon dioxide is absorbed more rapidly. Of late many are using air for inflation with no ill effect.

The procedure can be carried out in the office and the patient may go to her home, after fifteen to thirty minutes with little, if any discomfort, as obviously only a small amount of gas or air need be passed in order to determine the patency. The modified apparatus consists of a hand bulb to force the air, a manometer to measure the amount of pressure and a canula with a rubber flange to insert through the cervix into the uterus. In patent cases the pressure rises to between 60 and 100 mm., then drops to 20 or 50 mm., as the air passes through the tube. A stethoscope placed above the symphysis reveals a soft whistling sound as the air escapes in the abdomen. When the patient gets up, pain in the shoulder is noticed but this soon goes away. In the nonpatent cases 200 mm. of pressure may be accepted as evidence of nonpatency. This pressure should be repeated three or four times at each test. Meaker advised six tests before making a diagnosis of occlusion and states that several pregnancies have occurred after the attempt was made with apparent failure to force gas through. The Rubin test is contraindicated at or near the menstrual time, in the presence of acute pelvic inflammatory disease or serious heart disease. The simplicity of this method lends itself to practical use.

Operations for the relief of sterility should not be done without a preliminary patency test, as it is impossible to tell by palpation whether or not the fallopian tubes are open. The finer lesions will escape notice by bimanual palpation even under an-

esthesia, while the one important point, tubal obstruction, can be definitely determined by trans-uterine insufflation. Another point which seems quite definitely established is that this test has some therapeutic value, in that a number of pregnancies have been reported following its use. It has the possibility of breaking up light adhesions and re-establishing patency. This test should be used in carefully selected cases, the indications and contra-indications strictly observed and careful asepsis carried out.

I have used the Rubin test, using air instead of carbon dioxide or oxygen for testing the patency of the fallopian tubes fifteen times with no ill effects. In only one patient was there any unusual disturbance. This was a case of closed tubes in a middle aged woman who had had chronic pelvic pain, extending over a long period of time. There was a history of pulmonary tuberculosis preceding the onset of the pelvic trouble. Examination showed the uterus to be somewhat fixed with no appreciable enlargement but considerable tenderness of both adnexa. The test was used in this instance as a diagnostic measure to determine whether or not there had been an inflammatory condition of the tubes with resulting closure. This patient remained in bed for several days following the insufflation because of acute pain through the pelvis, but recovered without any further disturbance.

It is interesting to note that in another patient in whom air could not be forced through at 200 mm. of pressure, thirty days later, this time having given the patient 30 minims of benzyl benzoate every four hours for a day preceding, the air went through at a pressure of 140 mm. The use of benzyl benzoate for this purpose was suggested by a recent writer.

#### TREATMENT

Leaving out gross lesions which absolutely bar conception and defy correction, we must treat cases that are at all possible of cure with due regard to lesions causing sterility. The patient with obesity due to dietary errors must have her food restricted so that she will attain her normal weight. Endocrine disorders causing obesity and amenorrhœa should be given proper glandular therapy. In malnutrition our treatment should consist of building up the patient to a normal condition. Focal infections, if found to be a factor, should be removed. Systemic diseases should be given their proper type of treatment.

Our patient should be instructed regarding the

sexual act. In some cases abstaining from the coitus for long periods has been of value, or advising intercourse just before and after the menstrual period with none between. The weak alkaline douche taken just before intercourse is occasionally useful. Elevating the hips or taking the knee chest position for fifteen minutes after coitus has been followed by happy results.

Infections of Skene's tubules or Bartholin's glands must be cured. Endocervicitis with or without erosion should be eradicated. Treatment by the use of iodine, mercurochrome or silver nitrate applied at intervals to cervical mucosa will cure many simple cases. The actual cautery, using a nasal tip and cauterizing small linear areas at intervals of several days, often helps the more severe cases.

A persistent endocervicitis which does not yield to the above measures must be dealt with by eradicating the cervical mucous membrane. The method of Sturmdorf is simple and gives satisfactory results. Amputation of the cervix is not a good procedure here because it frequently in itself produces sterility and, should pregnancy occur, there is likely to be dystocia at the time of labor. This is not true of the Sturmdorf operation which consists in removing a core of cervical mucosa to the internal os and turning in a cuff of the stratified squamous vaginal mucosa which is carried up and covers the denuded area. This procedure permanently cures endocervicitis.

Strictures in the cervical canal are found by passing a sound. They are located most often at the internal os and should be gradually dilated until they remain open. A case recently seen of primary sterility of four years duration conceived immediately after this procedure and is now six months pregnant. Needless to say, the passing of sounds should be done under the strictest aseptic precautions.

Displacements of the uterus which are movable should be replaced and held in correct position by a suitable pessary. Operative replacement of the retrodisplaced uterus in the absence of any symptoms referable to the displacement except sterility is not warranted, in my opinion. The cause of the sterility is probably due to infective lesions that are associated.

Curettagé has been given credit for curing sterility in many cases. The procedure should be condemned for it has dangerous possibilities. It may produce an infection of the endometrium which at times travels to the fallopian tubes, causing closure

and thus renders a woman sterile who was potentially capable of pregnancy. The value of this procedure, if any, seems to be in the dilation of the cervical canal, a preliminary necessary to passing the curette into the fundus of the uterus.

When the anterior vaginal wall is short with the cervix pulled up under the symphysis, as we frequently see in cases of antelexion, the condition may be corrected by making a transverse incision in the vaginal wall about one and one-half inches in length just anterior to the cervix and, after freeing the fibers of the pubocervical ligament which are attached to the anterior lip of the cervix, the incision is closed longitudinally. This lengthens the anterior wall and allows the cervix to drop back into its proper position.

The cervix may be dilated at the same time if stenosed, or the pin hole os enlarged by such procedure as the Pozzi operation. This consists in making an incision in either side of the cervix after the manner of a bilateral laceration and sewing the edges of the wound together in the opposite way. This leaves a gaping opening when healed. Another procedure is the Dudley operation, in which the incision is carried through the posterior lip backward. A wedge is removed and the resulting wound repaired in such a way as to enlarge the opening of the external os. Either of these procedures gives the cervical canal better drainage and this is an advantage where there is a passive congestion.

Fibroids affecting the lumen of the uterine canal usually produce symptoms which themselves call for relief. In operating, if practical, we should choose a procedure that will allow an opportunity for pregnancy. A myomectomy can often be done where there is a single fibroid or a small number and their removal will not produce too much damage to the uterus.

In surgery of the closed tubes a good deal of judgment is required to say when and when not to operate. Not only the findings should be considered, but the history of the case is here very important. Repeated attacks of acute inflammation either gonorrheal or postabortal usually mean extensive destruction and irreparable damage. Curtis, who has done much investigative work with infections of the tubes, states that single mild attacks of either postabortal or gonorrheal salpingitis are favorable to operative relief. At operation the freeing of adhesions should be done by careful blunt dissection. The tubes are inflated from within the ab-

domen by inserting a Luer syringe into the fimbriated end of the tube and attempting to force air through into the uterus, following the method described by Curtis.

The distended tube will show points of obstruction and of bands of adhesions constricting the lumen. Probing the tube is likely to damage the mucous membrane and may produce false passages through the walls. By inflation we can determine whether or not the tubes are patent and worthy of preservation. A salpingostomy may be advisable and should be done in cases where a portion of the tube must be sacrificed.

In dealing with the ovaries any adhesions surrounding them should be removed. Prolapsed ovaries are better suspended. Resection of a portion of the ovary may be advisable in some cases of cystic disease.

Artificial insemination or the injection of semen into the uterus is recommended by some and has been done many times in the past with an occasional successful result. It is not, however, free from danger. Normally the seminal fluid does not reach the uterine cavity, the spermatazoa traveling to this point by their own motility. Quite a few cases of tubal infection have been observed, following attempts at artificial impregnation. This method of treatment is occasionally justifiable in carefully selected cases of cervical obstruction but not a procedure to be tried as a routine.

In conclusion, may I say that we are not justified in doing any surgery for the relief of sterility unless we have first definitely established that the husband is fertile; second, eradicated infections of the lower genital tract and; third, determined by the Rubin test whether or not the fallopian tubes are patent.

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## PROLONGATION OF LIFE

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What has the medical profession done to prolong life? It has done a great deal, as shown by the expectation of life in 1838 at 45 being increased to 58 in 1924. These changes have been brought about by better sanitation and by the study of preventive medicine. The great future of medicine lies in the prevention of disease. Improved conditions of sanitation were well brought out during the World War, as contrasted with the Civil and Spanish wars. During the Spanish war at Fort Oglethorpe, typhoid fever killed hundreds of soldiers. During the late war, typhoid fever was rare and, while this was due to inoculation against the disease, undoubtedly better sanitary conditions without the inoculation would have prevented, to a great extent, such an outbreak of typhoid as we had during the Spanish War.

We are all interested in the prolongation of life. Men have always sought means to this end. Metchnikoff believed that a man should live to be 100 and, since he found that Bulgarian peasants lived to a ripe old age, he concluded that it was due to Bulgarian bacilli in the milk. He tried the plan of giving bacillus bulgaricus cultures to others but it did not produce satisfactory results; other factors of the Bulgarian life undoubtedly had been overlooked.

Environment plays an important part in longevity. In the Balkans, Greece, Scandinavia, the Pyrennes and California we find conditions favorable to old age. Sir Humphrey Rolleston (*Some Medical Aspects of Old Age*, Macmillan, 1922, London) states "the Jews are long-lived because they follow Mosaic laws of health and because of long continued persecutions and hard life, there is a survival of the fittest." It must also be realized that eugenics enters into the problem of the prolongation of life.

Brown-Séguard believed that the extract of gonads was a panacea for all ills. He was injected with this extract and claimed that he was completely rejuvenated. All of the symptoms incident to old age disappeared and he was so enthusiastic about these results that he came to America to further his theory. As a result, factories used every available means of manufacturing these extracts to meet the demands of many people, until suddenly, at Sha-

mokin, Pa., ten people died as a result of these injections and then the enthusiasm quickly waned.

Extracts of gonads have been used for years in the belief that old age was due to a lessening of the activity of these glands. Others believed that the ovaries were affected in a similar manner in woman. Many claims have been made for these extracts but they have all met with general disappointment.

Thyroid gland extract has been used by many in the hope of warding off old age and some have employed a combination of extracts, such as thyroid, gonads, adrenals and pituitary, but only a few of them have proved of much value. Actual proof of value has been found only in the use of thyroid, adrenals and pituitary extracts. These are of value, when there is an indication for their use, and it is only by such tests as basal metabolism, Goetsch test, etc., that one can tell whether an extract should be used.

What has the medical profession done to prolong life in the aged? Practically nothing. Science has done its greatest work in reducing infant mortality and protecting children from disease. Tuberculosis, typhoid fever and diphtheria have been on the decrease and the diseases from which people of middle age suffer have been materially lessened, but those which affect the aged have been on the increase—arteriosclerosis, arterial hypertension, nephritis, diabetes and joint affections. Very little investigation has been made concerning the treatment of the diseases peculiar to old age and very little interest has been shown in the aged.

Nascher (*New York Times*, April 21, 1912) pointed out that, if more interest were shown in the aged, life could be prolonged. Preventive medicine prolongs life by preventing disease. Something should be done to prolong what we call "normal old age."

Many other things enter into this discussion of the prolongation of life in the aged. Statistics show that the actual death rate of persons past 65 is increasing. Dublin (*N. Y. Med. Jour.*, May 19, 1917) pointed out that in 1914 the mortality rate for persons past 65 years of age was 78.6 per 1000 living. The death rate was uniformly higher for males than for females. Dublin further showed that in 1914 there were 245,635 deaths of persons over 65 in the registration area of the United States and that about 20 per cent of these died of heart disease, 12.6 per cent from cerebral hemorrhage and

apoplexy, 11.6 from Bright's disease, 8.1 from cancer and there were 19,155 deaths from pneumonia. Suicide was the highest in old age, 36 per 100,000. Tuberculosis was an important factor, causing 2.3 per cent of deaths, and Dublin believed that the death rate from tuberculosis was almost as high as it is in the age period of 25 to 34, its relative importance being overshadowed only by the increased mortality from other causes.

Therefore, the most important conditions we have to combat in old age are heart disease, cerebral hemorrhage, kidney disease, cancer and pneumonia. Some believe the study of heart disease is only in its infancy now and our views are changing rapidly.

A great deal can be done to prevent heart disease, and by proper attention to high blood pressure, its causes and effects, we may be able to do a great deal to prevent diseases of the heart and kidneys, as well as prevent cerebral hemorrhage. The cause of cancer has not been ascertained and we cannot combat it with treatment unless it is taken early, and periodic health examinations should assist in its early detection.

Perhaps something can be done to prevent pneumonia by proper clothing, warm apartments in winter and the removal of focal infection. Suicides would be greatly lessened, if old people could remain at work. The majority of these suicides is due to despondency. Very few realize the difficulties an old man encounters in seeking a position. He is constantly told that he is "too old to work."

More interest shown in the aged, with a study of the treatment of those diseases peculiar to old age, would be of great benefit. Too often a death warrant is given in the words, "you are suffering from old age and nothing can be done for you." A little sympathy and attention shown the aged will often result in a cure of some seemingly incurable conditions. However, the usual attitude is to disregard an old person who is ill, because of the general pessimistic attitude of the public and physicians toward the aged. Medical neglect of the aged is fully as much in evidence as public neglect.

The wear and tear of modern life is more difficult to a man past 50, and there can be no question that the care-worn man is more subject to diseases of the blood vessels and the complications which follow. Responsibilities of work should be lessened past 50, even if such work involved smaller salaries.

In cities we see these care-worn men who get very little relaxation in life. Their work is usually indoors and they are robbed of the cheapest and the most important things in the world—fresh air and sunshine. As a rule, the country dweller is less care worn. The cost of living is lower and he does not have so much confusion about him. However, prolonged life in the city or country usually has the same effect on a person and it is remarkable sometimes to observe what a simple change of scene will do for an aged person. It seems like a rejuvenation in many instances.

Dante believed that 45 was the termination of youth. Sir Andrew Clark thought that the onset of old age was the time when a man ceased to adjust himself to his environment.

At the climacteric women should place themselves under the care of a physician and remain under it for two years. As there is a tendency to become obese at that time, it should be guarded against by proper diet and exercise. The kidney function should be examined frequently and the blood pressure observed at least once or twice a year. In this way many slight abnormalities can be corrected, especially an increase in blood pressure.

While some observers believe that there is a period in a man's life similar to the menopause in women, there is nothing to prove it and it probably does not exist. Some of these "changes" follow such infections as influenza and are misinterpreted. Thus the general weakness and nervous exhaustion following influenza may be thought to be due to other causes.

Most of the cases which have been reported as reaching an extreme old age have been shown to be untrue. John Shell of Kentucky, who was said to be 130 years of age, was found by Nascher (*Med. Review of Reviews*, June, 1920) to be only 98. It is doubtful if other instances of extreme old age are true. People from foreign countries seldom know their correct ages, which results in confusion in health statistics.

While Metchnikoff (*The Prolong. of Life*. London, V. Heineman, 1907) believed that he solved the problem of prolongation of life, he died at the age of 70. However, it should be stated that he had been in poor health from a diseased heart, contracted previously to his change in regimen.

"Life can be prolonged if more interest is shown in the aged."

## CHILD HYGIENE AND THE PHYSICIAN

GEORGE J. MOHR, M.D.

SEATTLE, WASH.

Public interest in and demand for health information is rapidly becoming greater. Public health is now a matter of interest to the "average citizen." In the field of child hygiene this interest is particularly great. The passage of the Shephard-Towner Act is merely a reflection of the great popular interest in child health.

In the United States the maternal death rate during 1921 was 6.8 per one thousand live births, as contrasted with 3.9 for England and Wales and 5.1 for New Zealand. In the State of Washington the maternal death rate in 1921 was 7.8. This was the highest death rate of any state in the registration area, being equalled only by South Carolina. In 1922 this rate in Washington was 7.9, while South Carolina went even higher, to 8.5. Minnesota shows the lowest maternal mortality, with a rate of 4.9 deaths per one thousand live births in 1922. In Washington the high mortality is largely due to septicemia and toxemia of pregnancy, both classes of conditions largely, if not entirely amenable to preventive measures.

The mortality among infants is relatively lower, Washington standing high in this respect. The physical status of the young child in Washington probably compares favorably with that of the child elsewhere in the country. Certain findings are of interest in this connection.

During the past year over 5000 apparently well infants and children of preschool age were examined in a series of health conferences throughout the state. Interesting facts were brought to light. In 1143 children, for whom findings were tabulated, only 449 were found free of defects that were preventable or amenable to correction. Defects noted included faulty nutrition, rickets, postural deformities, defective hearing, enlarged or diseased tonsils and adenoids, dental caries and orthodontic defects, thyroid enlargements, adenitis, herniae, genital abnormalities and a variety of other disturbances. It is to be noted that these findings were observed in apparently well children who had for the most part not been presented to the family physician for examination.

Apparently, then, there is inadequate supervision of the physical development of the small child. Parents are slowly learning that it is necessary to

determine whether physical facts detrimental to normal growth and development exist, even in the absence of acute disease. Too many physicians content themselves with dismissal of the well child with most cursory examination and the general statement that "nothing is wrong."

The care of the well baby and the well child constitutes a neglected phase of general medical practice. I know it is difficult to expect the busy doctor to concern himself with the care of the well individual, when he is so busy caring for those more urgently in need of medical treatment. However, it is a part of the physician's task as a physician. The public is learning the lessons of preventive medicine rapidly and enlightened parents are demanding prophylactic and preventive advice from physicians.

The physician who adopts a sufficiently broad attitude to enable him to meet the needs of his community in preventive medicine will surely do himself and the medical profession much real service. It is a sad commentary that among a group of seventy-six children of preschool age in a mid-state community, not a single child had even been vaccinated against smallpox.

Permit me to briefly outline what might constitute the clinician's personal program in preventive medicine and child hygiene. This is entirely from the standpoint of maternal and child care.

1. Insistence upon sufficiently early and frequent visits by the pregnant mother to assure the physician plenty of opportunity to make the necessary general examination, pelvic measurements and observations, blood pressure readings and urinalyses.

2. Instruction of the mother in those aspects of prenatal care that will teach her to best safeguard her health during gestation. This will in all cases include instructions in general hygiene, rest, work, clothing and diet.

3. Insistence upon adequate hospital or home environment during confinement.

4. An adequate obstetric technic.

5. Insistence upon an adequate puerperal period of rest. A minimum of ten days in bed and abstinence from ordinary household duties of at least three weeks from time of birth probably meets the usual requirements in this respect.

6. Insistence upon breast feeding whenever at all possible. Proper prenatal and postpartum care of the mother will do much to conserve and augment the breast supply. Weaning is too frequently re-

sorted to in cases of difficulty due to inadequate supply of breast milk, colic or other minor disturbances. Proper diet, rest and possibly manual expression of the breast while the infant is kept at the breast, with either complementary or supplementary feedings, will frequently result in eventual restoration of an adequate supply of breast milk. The mortality among breast fed babies is much lower than that among artificially fed.

7. A reasonably carefully controlled period of infancy. This includes fairly frequent weighings and inspection of the child to determine that proper growth and development are proceeding. Particular emphasis should be placed upon noting early signs of rickets, such as evidence of anemia, enlarged parietal or frontal bosses, craniotabes, delayed closure of fontanelles, beading of the ribs, grooving of the chest wall, pot belly, enlarged spleen and enlarged epiphyses. Every baby should routinely be observed specifically for all these findings in addition to those noted on the usual physical examination.

8. Proper infant dietary, including early use of solid foods is a most important prophylactic procedure. Proper diet means an absence of scurvy and rickets with attendant lowered resistance to disease and developmental defects. Pure cod liver oil in moderate dosages may well be considered routine in the infant diet, even among the breast fed.

9. Fairly frequent examination of the child should be made during the first few years of life. Periodic examination of children will reveal minor defects that may be readily corrected. Nutritional and developmental disturbances are readily detected and corrective measures may be instituted. There is no reason why the child on entering school at the age of six should not be as free of physical disabilities as is possible.

10. Those specific measures that have been developed by medical science for prevention of disease should be utilized. Vaccination against smallpox and immunization against diphtheria by toxin-antitoxin injections should be routine procedures. As it is, they are still neglected and there are unnecessary deaths from these diseases. In the Pacific Northwest goiter prophylaxis by administration of iodine in proper form and dosage is now recognized to be a definite need. Popular prejudice and ignorance regarding these conditions should be overcome and this is largely a personal responsibility of the family physician. If the physician gives his

patients to understand that at some given definite time he expects them to have their children immunized against diphtheria and smallpox, this will usually be done.

While the above outline seems lengthy, as a matter of fact, when analyzed, it resolves itself merely into the statement of a very few details that together constitute something approaching ordinary conservative care for the mother and child. I have been terrifically impressed during about four years of contact with child hygiene work with the almost uniform neglect of this phase of medical practice. I truly believe that this neglect constitutes one very important element now operative in alienating the public from the medical profession. The cultists and faddists never fail to take advantage of the mother's interest in her child. Physicians, by displaying a reasonable amount of interest in the matter of prenatal care, confinement care, and care of the well baby, can do their patients and the medical profession a very real service. They can maintain an increased respect on the part of the public for the character of service the medical profession can render and, most important, they can function much more adequately than they are doing in conservation of maternal and child health and physical efficiency.

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#### THE SYPHILITIC REGISTER

W. J. PENNOCK, M.D.

SPOKANE, WASH.

We were so impressed by the practical advantages of the syphilitic register as we came in contact with it in the last war, that we adopted a modified form of it for our own use. It has seemed useful to us and we offer it to other practitioners with the idea that, if it appeals to them, they may modify it to suit their individual needs.

As is evident, we have eliminated everything not absolutely essential in an endeavor to condense a necessarily long clinical record into the most compact form. One card covers the record of one year's treatment. Subsequent examinations and treatments are carried on another of the same cards. When a patient leaves us, he is given a duplicate of his history card, showing all treatment received and clinical and laboratory findings. The card we use is the usual 5x8 inches.

The advantages we have found in this record are: (1). It allows one easily to see just how much

NAME: *Smith, Mr. John* 1923 Jan. 20 DR.  
 RESIDENCE: *218 W. 5th Ave.* BUSINESS ADDRESS: *41 N. Wall St. (Accountant)*  
 REFERENCE: *Dr. J. G. Brown* TELEPHONE NO.: *M. 4821.*

HISTORY: *Past history negative. Exposure four weeks ago.*

PHYSICAL EXAMINATION: *Heart and lungs normal.*

GENITALIA: *Shallow indurated ulcer on corona.*

MOUTH: *Normal.*

EYES: *Pupillary reaction normal.*

SKIN AND M. M.: *Normal.*

CENTRAL NERVOUS SYSTEM: *Reflexes present.*

DARK FIELD: *S. pallida.*

TREATMENT: *Neo salvarsan .9 gm.; four injections followed by merc. salicylate gr. 1.5 for 10 weeks. Courses to alternate for 1 year.*

SPECIMEN CARD — FRONT

MONTH	JANUARY					FEBRUARY					MARCH					APRIL				MAY				JUNE					
DATE			20	27		4	10	17	24		3	10	17	24	31	7	14	21	28	5	12	19	26	2	9	16	23	30	
SALVARSAN-NEO			.9	.9														.9	.9	.9	.9	.9							
MERCURY SALICYLATE						1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5					1.5	1.5	1.5	1.5	1.5	
ALBUMINURIA			0					0			0	0										0						0	
BLOOD WASSERMANN			+	++	+++	++++																							

MONTH	JULY				AUGUST				SEPTEMBER					OCTOBER				NOVEMBER				DECEMBER							
DATE	7	14	21	28	4	11	18	25	1	8	15	22	29	6	13	20	24	3	10	17	24	1	8	15	22	29			
SALVARSAN-NEO					.9	.9	.9	.9										.9	.9	.9	.9								
MERCURY SALICYLATE	1.5	1.5	1.5	1.5					1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5								1.0	1.5	1.5	1.5
ALBUMINURIA				0					0					0				0								0			
BLOOD WASSERMANN																													

SPECIMEN CARD — BACK

treatment a patient has received and when treatment was given, as well as a graphic record of the Wassermann findings. (2). If the patient goes to another physician, this record shows clearly how much and what treatment has been given, and the

second physician can proceed easily with his treatment.

No originality is claimed, as the card is merely the Syphilitic Register of the United States Army, with changes adapting it to use in private practice.

# NORTHWEST MEDICINE

The Journal of the State Medical Associations of  
Oregon, Washington, Idaho and Montana

Devoted to the interests of the Medical Profession of the  
Pacific Northwest

Editorial Office, 543 Stimson Building, Seattle, Wash.

MAY, 1925

## EDITORIAL

### HAS THE CANCER PROBLEM BEEN SOLVED?

During the past quarter century numerous laboratory investigators in many parts of the world have worked most industriously in the effort to determine the etiology of cancer. At various times it has been announced that the quest has been attained. Heredity, food, perverted metabolism, trauma or irritation and several forms of parasites have been announced as the causative agent in this disease, each of which in turn has failed to meet the rigid requirements which have been adopted throughout the medical scientific world, so that a universal spirit of skepticism has been developed and now an almost unfriendly or even hostile reception is accorded the announcement of a discovery of the long sought causative agent.

Some years ago Glover, of New York, announced that he had isolated an organism which met all the requirements of the Koch postulates, that it was universally found in cancerous growths, and its inoculation would reproduce cancer at will. This claim was not accepted by the profession at large and received little encouragement from recognized authorities in this line of investigation. His research work has continued, however, in conjunction with other investigators. Scott<sup>1</sup> has published a detailed description of the results obtained by Glover, work which was later repeated by himself. The microorganism which Glover discovered is polymorphic, appearing as bacillus, micrococcus or spore-sac. They find this parasite in every carcinoma examined and can reproduce the growth in all animals in which it is inoculated, recover the organism from this growth and from its metastases, and complete this cycle indefinitely. Recent publications are significant which parallel these results, obtained by investigators who, working independently and following similar methods, have isolated similar organisms and have obtained like results.

Several years ago Nuzum announced the discovery of a micrococcus which he declared was the

cause of cancer. Recently, he has again published a description of his investigations and the results obtained thereby.<sup>2</sup> He describes the isolation of this micrococcus from human breast cancer, detailing its cultural and morphologic characteristics. By injecting the organism into mice he produced typical carcinoma. The same result was obtained from a like inoculation into a human. He concludes that the same microorganism is regularly present in human breast cancer and in a transplantable tumor in the mouse. He says it cannot be denied that genuine cancer with metastases has been produced in the dog, and primary cancer in man by repeated inoculations of pure cultures of the microorganism so constantly present in human breast cancer. Ochsner<sup>3</sup> affirms that the invariable presence of Nuzum's micrococcus in cancer in man and in lower animals, the production of typical metastasizing cancer in lower animals and in man by inoculation of pure cultures of this micrococcus, the fact that pure cultures of the same micrococcus from these cancers have again produced typical cancer in other animals, convinces him that this micrococcus is in fact the ultimate cause of cancer.

Young,<sup>4</sup> of Edinburgh, has reported results of his investigations which convince him of the parasitic origin of cancer. He states there are two factors which change a normal cell into a cancer cell, an antecedent cell susceptibility and an immediate cancerogenic factor. He has almost constantly obtained from cancer tumors an organism with a complex life story. It possesses amorphous and polymorphous phases, each of which grows true to type and lives a wholly independent life. He believes the parasite belongs to familiar bacteria widespread in nature and the ease with which cancer can be produced in animals by irritation implies immediate risk of infection by a ubiquitous organism.

Loudon and McCormack,<sup>5</sup> of Toronto, have conducted independent investigations relative to the Glover organism in an effort to determine whether the claims of Glover and Scott could be verified. They report observations regarding the isolation, culture and identification of an organism which

2. Nuzum, J. W.: The Experimental Production of Metastasizing Carcinoma in the Breast of the Dog and Primary Epithelioma in Man by Repeated Inoculation of a Micrococcus Isolated from Human Breast Cancer. *S. G. and C.* 40:343, March, 1925.

3. Ochsner, A. J.: Cancer Infection. *S. G. and O.* 40:336, March, 1925.

4. Young, James: A New Outlook on Cancer: Irritation and Infection. *Brit. Med. Jour.* 3341:60, Feb. 10, 1925.

5. Loudon and McCormack: Preliminary Report on the Glover Microorganism as the Specific Cause of Cancer. *Can. Lancet and Pract.* 64, Jan., 1925.

1. Scott, M. J.: The Parasitic Origin of Cancer. *Northwest Medicine*, 24:162, April, 1925.

they believe to be identical with the Glover organism. It is pleomorphic, appearing as bacillus, coccus and spore-sac and in one phase is filtrable. They describe in detail their experiments in reproduction of cancer in animals by inoculation of their organism, paralleling the work reported by Glover. An editorial in the *British Medical Journal*<sup>6</sup> reviews the work reported by the various writers who have asserted they have identified the causative microorganism in the production of cancer. The writer states that all these investigators are apparently dealing with the same organism and present similar methods of culture and reproduction. He observes that certain pathologists are reverting to the belief, once generally held, that cancer is due to infection from an extraneous organism. He believes there is much to be said for this view and investigations along this line deserve encouragement.

Whether or not one is inclined to accept the views advanced by these investigators he is scarcely justified to condemn them offhand. Many instances might be cited of well established scientific facts in medicine which, when originally promulgated, were received with incredulity and whose authors were oftentimes ridiculed and even persecuted because their radical announcements were at variance with the accepted orthodox views of the profession. The wise observer is open-minded, prepared to consider judicially any alleged discovery in the realm of medical investigation, assured that if it is false, publicity will sound its death knell, while, if it presents a germ of truth, other investigators will confirm it and in due time it will become an established fact in scientific medicine.

#### NEXT MONTH'S PORTLAND MEETING

Some changes have been made in the program of the meeting of Pacific Northwest Medical Association at Portland, June 29-July 1. The list of papers and speakers is as follows, as far as received at this date.

Dr. Hugh Cabot will present papers on: (1) "Management of Small Stones in Kidney and Ureter," (2) "Renal Tuberculosis,"

Dr. Reginald Fitz has changed his titles to read: (1) "The Action of Insulin," (2) "The Importance of a Routine Wassermann Test in Private Practice."

Dr. Henry W. Woltman has changed the title of one of his papers. They now read: (1) "The Syndrome of Compression of the Spinal Cord," (2) "The Significance of Pain as a Symptom in the Diagnosis of Disease of the Nervous System."

Dr. James B. Herrick will give three papers on: (1) "Diseases of the Coronary Artery," (2) "Angina Pectoris," (3) "Syphilis of Heart and Aorta."

Dr. R. L. Benson will present his monograph on "Coronary Artery Disease." This is the largest collection of specimen from coronary artery sclerosis in existence and has been thoroughly worked up by Dr. Benson, with special reference to the etiology and pathogenesis. In association with the clinical papers by Dr. Herrick, this will make a memorable symposium.

Dr. Alan N. Drury has made no changes in his titles, which are: (1) "The Uses and Abuses of Clinical Signs in Cardiologic Practice," (2) "Prognosis in Heart Disease," (3) "The Application of Electrocardiography to Practice," (4) "Some Observations upon Arteriovenous Aneurysm."

Dr. Marriott adheres to his original titles: (1.) "Some Newer Viewpoints Concerning the Nature and Treatment of Nephritis," (2.) "Acidosis," (3.) "Some Problems in Infant Nutrition." This will be given before the North Pacific Pediatric Association.

Dr. Nathaniel Allison will lecture on: (1.) "The Diagnosis of Knee Joint Disease and Injuries," (2.) "The Diagnosis of Hip Joint Affections." He will give a third lecture before the organization meeting of the Pacific Northwest Orthopedists Association on a subject not yet announced.

Dr. Henry M. W. Gray has made no changes in his original program. It reads as follows: (1.) "Developmental Abnormalities Affecting the Colon, Their Far-Reaching Effects. Suggested Treatment," (2.) "Acute Intestinal Obstruction," (3.) "Carcinoma Mammae."

Dr. Barney Brooks, of St. Louis, has condensed his lectures into two, instead of three: (1.) "The Anatomic and Physiologic Pathologic Changes Associated with Diseases of the Circulation of the Extremities," (2.) "The Clinical Manifestations of Diseases of the Circulation of the Extremities. Methods of Diagnosis and Treatment."

Dr. L. F. Barker has written that he will be present, but still has not announced the subject for his three addresses. Dr. G. N. Stewart will give lectures on the various ductless glands, as previously announced.

In connection with the organization of the Pacific Northwest Orthopedic Association, tentative arrangements are as follows:

Dinner, Wednesday evening, July 1, for twenty-five Northwest orthopedists. Address by Dr. Nathaniel Allison, Organization of the Pacific Northwest Orthopedic Association.

Thursday morning, July 2. Dry clinic by Drs. Aiken and McClure. Place to be announced. Luncheon, at 1:00 p. m., at the University Club. 2 p. m., a visit to the Shriners' Hospital for crippled children.

The Urological Association has arranged to meet on June 28, presumably in the Multnomah Hotel. Three papers have been arranged for, one by Dr. G. S. Gordon, of Vancouver; one by Dr. Mackay, of Portland, and one by Dr. A. B. Hepler, of Seattle.

Hotel reservations may be made by writing to Dr. Sheldon, Selling Building, Portland. However, the Arrangements Committee makes the proviso that no reservations will be made until applicants have made

6. *British Med. Jour.* 3350:521, Mar. 14, 1925.

registration, owing to the limited hotel space at their disposal. This is to provide against registrations made by men who are not certain about coming.

Arrangements have been made to provide golf foursome for the speakers and others who desire to play the games before and after the meetings. Two comfortable rooms have been provided in the Multnomah Hotel for the sessions and loud speakers will be installed so that everyone will be able to hear the speakers.

*Reduced rates have been obtained on all the railroads, whose distances are relatively close to Portland. Southern Idaho, eastern Montana, Saskatchewan and parts of Alberta will find it more economical to buy round-trip summer excursion tickets, than at Convention rates.*

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### MONTANA ANNUAL MEETING

The Medical Association of Montana will hold its annual meeting at Lewistown, July 8-9. An interesting program is in preparation which it is expected will help to bring a large attendance. The following speakers have been secured to appear on the program: Dr. W. C. Woodward, of Chicago, secretary of the Bureau of Legal Medicine and Legislation of the A. M. A. Dr. deJ. Pemberton, of Rochester, Minn., will read a paper on Thyroid Surgery. Dr. Floyd Clarke, Professor of Pediatrics of the University of Nebraska, will present a paper. Correspondence has been held with others who are expected to present papers. Eight members of the state association will also be on the program.

The Montana Public Health Association will meet July 6-7. This will include the state board of health, state tuberculosis association and all other groups of health activities, in which both the laity and medical profession will have a part. A meeting of the eye, ear, nose and throat section will be held July 7. Doctors from other states are invited to attend and to participate in this meeting.

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### A NEW TRUSTEE

The Council, of the Oregon State Medical Society, has appointed Dr. Robert C. Coffey, of Portland, as one of the NORTHWEST MEDICINE trustees from Oregon, to take the place of Dr. W. T. Williamson, recently deceased. It is a pleasure and satisfaction to the editorial staff that Dr. Coffey has been selected to this office. He was a member of

the committee which devised the plan of having a tristate journal, and designated NORTHWEST MEDICINE for that purpose, when the tristate society was organized in 1909. He has indicated an active interest in the affairs of the journal during the years which have followed.

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## MEDICAL NOTES

### NEW ADVERTISEMENTS

Attention is called to the following new advertisements appearing in this issue. Polk's Directory (page 20) features doctors' names in the city directory. Jefferson Medical College announces its Annual Session (page 15). Penton Publishing Co. (page 14) presents Dr. Price's 2 vols. on Dental Infection and Degenerative Diseases. Virginia Mason Hospital announces its Training School for Nurses (page 29).

The Gorgas Memorial Institute seems to be accomplishing its initial purpose of uniting laymen and doctors, and instilling into the masses a recognition of the fact that scientific medicine is the only proper authority in health matters. The Institute evidences a healthy growth from the Atlantic to the Pacific. The value of periodic health examinations is a subject that the foundation is stressing in hundreds of newspaper articles, in public talks and in radio addresses the country over. Scores of editorials have been written and published by leading newspapers. Without exception they have deep sympathy with the ideals of the organization and heartily endorse it. Attention is called to the work of Gorgas in checking yellow fever and other forms of pestilence. From a financial standpoint, it is noted that large sums of money would be saved annually as well as decrease in sickness, were periodic health examinations generally adopted and the health measures followed which are advocated by the Institute.

**Graduate Summer Course.** University of California Medical School, at San Francisco, will conduct a summer graduate course, June 15 to July 11. Most of the clinical subjects are to be covered by definite courses, including general medicine, gastrointestinal diseases, circulatory diseases, pediatrics surgery, obstetrics and gynecology, nose and throat, eye genitourinary, skin, neuropsychiatry, x-ray, laboratory diagnosis, and pathology. In addition to these will be a daily clinic lecture at noon and an evening lecture Monday and Thursday. These will be on topics of general interest and will be open to the medical public. They will be given by the various members of the University of California staff and a number of invited guests. Many of the courses will necessarily be limited as to enrollment. Those interested are asked to write at once for complete announcement.

**Don't Use Bunion Pads.** Surgeon General Cumming, of the United States Public Health service, has

issued a warning against the use of bunion pads as dressing after vaccination against smallpox. Several fatal cases of tetanus have recently been reported after their use and tetanus spores have been discovered in these pads. The advice is to use no kind of shield as a vaccination dressing. Exposure to the air and freedom of all pressure and irritation is to be desired. The Surgeon General states that since 1900 six million have been vaccinated in the Army and Navy without a single case of tetanus having occurred.

#### OREGON

**State Society Growing.** The secretary of the state society in summarizing its membership calls attention to its healthy condition in this respect. As an illustration, the membership in Portland City and County Society is presented. In 1922 the membership in good standing was 463. The increase of dues the following year naturally made a material decrease in membership. Since that reaction has now passed the membership is again on the upgrade and at the beginning of this year the total number in good standing was 468. These facts indicate that the amount of dues for the medical society is not the sole determining factor in the number of its members.

**Plans for New Hospital.** Plans have been prepared for the new \$300,000 building for the Emanuel Hospital, the excavation for which has been completed. It will be five stories, of reinforced concrete, faced with brick and stone. The structure to be first erected will be the initial unit, one hundred and sixty by one hundred feet in size. It will be a modern and up-to-date hospital in every respect.

**Emergency Hospital for Employes.** A postoffice emergency hospital is to be opened in Portland, for first aid and medical treatment for the six hundred fifty postal employes. A full time nurse and a pharmacist will be in charge of the hospital.

**Hospital Under Construction.** An addition is being built for the Klamath Valley Hospital at Klamath Falls, by its owner, Dr. W. G. Hunt. It will be three stories in height, adjacent to the present hospital, and will be used for convalescent patients. It will be brick to correspond with the present hospital and will cost about \$45,000.

**New Indian Hospital.** The Government will soon begin the construction of a forty-bed hospital at Klamath Agency to serve Klamath Indians. The building will cost \$25,000. Government physicians will be in charge of the hospital which will be conducted as all other government hospitals.

**Addition to Hospital.** The Lumbermen's Hospital, at Bend, financed by the Brooks-Scanlan Lumber Company, is nearly completed. It will double the present capacity of the hospital, giving accommodation for twenty-five patients. This addition will be 36 by 75 feet and will cost about \$6,000.

**Dr. F. H. Thompson,** of Salem, will leave this month to participate in the international postgrad-

uate clinic tour of American physicians to Canada, British Isles and France. He will continue to Vienna and other European cities for postgraduate study.

**Dr. H. W. Coe,** of Portland, has returned from a trip to the Orient, where he spent several months visiting ports of China and the Philippines.

**Dr. J. B. Gillis,** who has practiced for the last ten years at Milton, has located for practice at Coquille.

**Dr. C. A. Haines,** recently of the Emergency Hospital at Portland, has located for practice at Ashland.

**Dr. W. D. McNary,** superintendent of the Eastern Oregon Hospital, has been elected president of the Pendleton Rotary Club.

#### WASHINGTON

**Quarantine against Rabies.** Douglas county last month was placed under quarantine against rabies, owing to dogs being discovered in the vicinity of Wenatchee which were infected with this disease. Dog owners were warned that all dogs should be muzzled and securely kept under leash. All unmuzzled dogs running at large may be killed by anyone without liability.

**New Medical and Dental Building.** Construction work has begun on a \$200,000 office building in Everett for the use of physicians and dentists. It will be six stories high of reinforced concrete, with brick and terra cotta facing. It is located at California Street and Colby Avenue, the location for twenty-five years of the home of Dr. W. C. Cox.

**New Hospital Projected.** It is proposed to build a community hospital in West Seattle. It will be a nonprofiting enterprise, financed by the citizens of that district. It will consist of fifty beds and will contain a nurses home and training school. It is being promoted by the physicians in that section of the city.

**Construction of County Hospital.** An additional ward is to be built at the county poor farm at Wide Hollow, Yakima county. It will be constructed for indigent individuals and will accommodate twenty-five or thirty patients. It will cost about \$4,000.

**Watershed to Remain Closed.** After much discussion regarding the Walla Walla water supply, an agreement has been made with the Forestry Department to keep cattle from grazing in the watershed of that city for one year, while investigations are being made to determine whether it shall be permanently closed against the entrance of cattle. The question will also be considered whether this area shall be also restricted against human entrance except to necessary workmen.

**Director of Hospital.** Dr. W. G. Cassels, who practiced in Alaska and Seattle for many years, has been appointed clinical director at United States Veteran's hospital, No. 60 at Olen, N. C.

**International Golf Tournament.** Fourteen Seattle doctors contested with the medical golf enthusiasts

in Victoria, April 18. Canada won 43 to 20. In a previous contest, at Seattle, the golfers from the latter city were victorious. Some time this month, Vancouver and Victoria will combine to down the Yankies from Seattle.

**Visit from Persian Missionary.** Dr. H. P. Packard, of Urumia, Persia, visited relatives in Seattle last month. For nineteen years he has been in charge of hospitals in Persia. During that time he performed more than five thousand major operations and had an unique experience in all forms of medical practice. He relates many thrilling and heart rending incidents which he witnessed of massacres of Armenians by the Turks.

**Seattle Has Lowest Death Rate.** According to figures quoted by the Commissioner of Health, Seattle holds first place among American cities for healthfulness. For 1924 the death rate per 100,000 was 10.10, the lowest of any American city of 100,000 population. The infant death rate was 45 per thousand, which is lower than that of any other American city.

**Visits Patient by Aeroplane.** Dr. Stanley Titus, of Spokane, visited a patient at Omak last month, a distance of one hundred thirty-five miles, which was covered by aeroplane in two hours, returning home in one and one-half hours. Apparently, the trip was enjoyable.

**Appointed to Veteran's Bureau.** Dr. H. M. Read, who has practiced in Seattle for more than twenty years, has been appointed to the Veteran's Bureau service and has been assigned to the Portland office. He served in the United States army during the world war and was commissioner of health in Seattle for a period of five years.

**Speakers at Scientific Association.** The Northwest Scientific Association held a meeting last month at Spokane. The medical section was addressed by Drs. Epplen, Rott, Jennings and Downs, who presented various medical topics on treatment of disease appreciable to a lay audience. This is commendable work for the instruction of the public in medical problems.

**Celebrates Golden Wedding.** Dr. and Mrs. F. A. Pomeroy, of Cheney, celebrated their golden wedding last month. The doctor has practiced in this city for more than forty years, serving as mayor and filling other responsible positions.

**Dr. F. A. Bird,** formerly medical advisor of the department of labor and industry at Olympia, left last month on the international postgraduate clinic tour of the American physicians to visit the clinics of Canada, the British Isles and France. He expects to return home in the fall.

**Dr. G. H. Crabtree,** of Seattle, has located for practice at Mount Vernon. He is a retired colonel from the United States army and at present is state surgeon of the National Guard.

**Dr. C. W. Lane,** formerly of Okanogan, has located for practice at Walla Walla.

## IDAHO

**State Medical Examination.** The State Board of Medical Examiners held a meeting at Boise last month. There were seven applicants for license to practice medicine in the state.

**Appointed County Physician.** Dr. J. W. West, of Idaho Falls, has been appointed county physician by the County Commissioners. He has served in this capacity for the past two years.

**Dr. J. D. Shinnick,** who has practiced for the past fifteen years at Cottonwood, has located at Grangeville, where he practiced previous to fifteen years ago.

**Dr. H. Wentworth** has located for practice at Stites. He formerly practiced at this location but recently has been at Greer.

**Dr. M. A. Kemper,** who has practiced for some time at Priest River, has left for Chicago where he will make his home in the future.

**Resigns from National Guard.** Dr. A. H. Budge, of Boise, has resigned as Captain of the Medical Corps of the 116th Cavalry of the National Guard.

**Miss Claudina Holm,** R. N., has been engaged by the public schools, of Idaho Falls, to devote her entire time to the schools of that city.

**Dr. A. A. Newberry,** of Flier, has been appointed physician for the Twin Falls Canal Company.

## MONTANA

**State Medical Examination.** The state medical examining board held a meeting at Helena, April 7. The following were successful in being licensed for practice: Dr. D. T. Berg, Helena; E. L. Anderson, Butte; L. C. Willems, Townsend; C. E. Hamil, Kalispel; S. H. Ferguson, Great Falls.

**Fight Against Spotted Fever.** The work of controlling Rocky Mountain spotted fever for 1925 has been started by Dr. R. R. Parker, of Hamilton, in charge of the United States Health Laboratory, in conjunction with the work of Dr. R. R. Spencer in charge of the laboratory. It is expected that even more advances will be made than those of last year which was unusually successful in control of this epidemic disease.

**Appointed Superintendent.** Dr. C. E. K. Vidal has been reappointed superintendent of the State Tuberculosis Sanitarium at Galen by Governor Erickson. The appointment is for an indefinite length of time. The doctor has held this position since 1919.

**Health Officer Reappointed.** The city-county health office staff, at Great Falls, has been reappointed for one year beginning the middle of August. Dr. Pickett will be in charge of the office as health officer.

## OBITUARIES

**Dr. Scott B. Hopkins,** of Spokane, Wash., died from disease of the heart, April 9, at 52 years of age. He was alone at home at the time and in the evening telephoned to a brother physician that he was ill. He died shortly after the latter's arrival. He was

born in Iowa and graduated from the Jefferson Medical College at Philadelphia. He practiced in Iowa until twenty-one years ago, when he moved to Spokane. He was well known as an eye, ear, nose and throat specialist, and was an influential citizen as well as a prominent physician.

**Dr. Joseph I. Mershon**, of Marshfield, Ore., died at Good Samaritan Hospital, Portland, March 22. He was born at Mt. Morris, Ill., November 5, 1884. After finishing high school work at Mt. Carroll he spent two years in the pre-medical department of University of Illinois at Urbana. He then entered the medical department of the University of Illinois in Chicago, graduating in the year 1911. His standing entitled him to an internship in the University Hospital of Chicago. Later he also served as interne in the General Hospital at Seattle. In 1921 he located at Marshfield, Oregon, where he became associated with three other physicians, he being the eye, ear, nose and throat specialist in the group. Shortly before his death he was elected to the staff of the Wesley Hospital of Marshfield and served as its secretary.

**Dr. John C. Mack** died at Portland, Ore., March 30, after a period of illness of several months. He was born at Mansfield, Ohio, in 1860 and began practice at Clarion, Iowa, moving later to Walla Walla, Wash., where he practiced for twelve years. In 1913 he retired and moved to Portland, where he has lived since that time.

**Dr. Ivan Keith**, of LaGrande, Ore., died April 4, age 36, after a brief period of illness. He occupied a prominent position in medical and civic affairs. He was a district surgeon for the Southern Pacific Railway. Also he was president of the Chamber of Commerce and Treasurer of the city. His loss was felt by all citizens.

**Dr. F. A. Rice**, of Everett, Wash., died April 15 after a long period of illness. He was 68 years of age, and had resided in Everett for fifteen years.

**Dr. J. L. Loomis**, of Portland, Ore., died April 19. He was 43 years of age.

## REPORTS OF SOCIETY MEETINGS

### OREGON

#### PORTLAND CITY AND COUNTY MEDICAL SOCIETY

Pres., H. C. Bean; Sect'y, K. H. Martzloff

A meeting of Portland City and County Medical Society was held at Portland Hotel, Portland, Ore., April 15. Minutes of the previous meeting were read and approved.

A letter was read from the Better Business Bureau of the Advertising Club, regarding the so-called Children's National Tuberculosis Society of Chicago, Ill., which is considered to be a questionable organization and is supposed to have representatives in the field making solicitations.

Dr. Else urged the members to subscribe to the Northwest Medical Association meeting that is to be

held in this city on the last two days of June and the first of July.

The first paper of the evening was read by Dr. George Cathey, which concerned itself with the approved methods of dealing with head injuries.

The second paper was read by Drs. Lawrence Selling and F. B. Kistner, entitled, "The Significance of Vertigo as a Symptom." Dr. Selling described briefly the anatomy and physiology, as well as it is known, of the vestibular and cochlear apparatus and then took up the various causes of vertigo, illustrating the different types by case reports. Discussion was opened by Dr. John Coghlan, followed by Drs. House and Kistner.

### WASHINGTON

#### KING COUNTY MEDICAL SOCIETY

Pres., A. C. Crookall; Sect'y, C. E. Watts

#### SURGICAL SECTION

The regular meeting of the Surgical Section of King County Medical Society was held at Seattle, Wash., April 13, 1925, Dr. R. D. Forbes presiding.

Dr. D. A. Murray showed a case of multiple cartilagenous exostoses and gave a resume of the subject. He further illustrated the condition by means of various x-ray plates.

Dr. Roger Anderson gave an interesting paper on "Traumatic Elbows," illustrated by moving pictures, x-rays and slides. He stressed the value of having both the sound and injured arm in the same comparative positions when making x-rays, illustrating the proper position in which an arm should be when an x-ray is taken. Nerve lesions are sometimes present at the time of injury, but they often follow manipulation. Conclusions were: (1) Fractures of the head of the radius are relatively frequent. (2) Epiphyseal line fractures may occur with x-ray evidence. (3) X-ray should be taken in two views before any attempt is made at reduction. (4) The presence of nerve lesions should be ascertained before manipulation is started. (5) Immediate reduction gives best results. (6) Most fractures in the region of the elbow, with the exception of olecranon fractures, do best in acute flexion. (7) Fractures of the capitellum and trochlea are serious. (8) Forced manipulation under anesthesia usually makes results worse than better. (9) Physiotherapy, muscle training and play, which involve the use of the elbow, give the best results when started early. (10) Final results in regard to elbow function following fractures are surprisingly good under the proper treatment. The paper was discussed by Drs. Kelton, Jeffery, Wyckoff and Lile.

Dr. H. J. Wyckoff read a paper on "The Pyretic Treatment of Chronic Arthritides." He spoke of the etiology and pathology of arthritis deformans and pathology of the points. A general condition of arthritis is more unfavorable than one joint only. He discussed Still's disease and gout. Prognosis in these cases is unfavorable. He advocated the use of low pressure sweats as used by Dr. Wilde and later by Dr. Goldthwaite. There must be a dietary, postural treatment and various standard

modes of treatment used also. These cases should have any of the various types of treatment, tending to alleviate the condition. In discussion Dr. D. A. Murray spoke of a type of hypertrophic arthritis which comes from a disturbed bodily mechanics. He advised keeping the patient exercising.

A meeting of the Medical Section of King County Medical Society was held April 20.

A letter from Miss Brock, Chairman of Hospital Day Committee, stated that May 12 had been set aside as Hospital Day, and asking for the co-operation of the medical society in its observance. It was voted to promise co-operation with the committee in charge.

The applications for membership of the following were read: Drs. J. F. Battle, A. E. Wade, A. L. Jacobson, Henry Takacs, C. C. Goss and Philipp Schoenwald.

Dr. L. L. Stephens read a paper on "Radiation Therapy." The old treatment for cancer is confined entirely to attempted complete removal, either by the knife or less frequently by cauterization or caustics. The use of radium and x-ray has been found to be of considerable value. Their selective action on embryonic tissue, particularly in basal cell carcinomas, is well known. Formerly x-ray was used only in inoperable cases, but now is used early in many types of carcinoma. In carcinoma of the breast, if used before surgery, it often simplifies operation and increases chances of patient. In inoperable cases the x-ray often palliates the pain, decreases the purulent discharge and causes lessening of cachexia. He discussed use of these measures in carcinoma of cervix and rectum. He stated that superficial lesions should be treated by radium, and glandular by x-ray. Deep seated lesions should have combined treatment. All cases of malignancy should have preoperative radiation as a means of decreasing mortality and simplifying surgical procedure.

In discussion Dr. Dwyer stressed the necessity of cooperation between surgeon and radiologist. He believes that early carcinoma of the cervix should be treated with radiation rather than surgery. In carcinoma of the breast preoperative radiation is of great value and the opposite breast should be treated afterwards to prevent recurrence. In carcinoma of the gastrointestinal tract x-ray is of little value. Dr. Snively stated that excellent results are obtainable in basal cell carcinoma, but in squamous cell type the results are not so good. Even though the cure is not made, prolongation of life and increased comfort is to be expected.

Dr. A. L. Jacobson presented a paper on "The Use of the Mercurial Germicides in Treatment of Cystitis." Hexamethylenamine, to be of any value at all, must be used in an acid medium and water taken sparingly. Every case should have a microscopic examination of the urine. Alkaline and cloudy urine is of no diagnostic value. Mercoxyl is a stronger

germicide than mercurochrome, and is slightly more toxic, so that it cannot be used intravenously. It does not stain so deeply and must be used in fresh solution. He cited several clinical cases and tests made on the urine as to bacterial content before and after using which showed sterile urine five minutes after the injection of a 1 per cent solution. Where marked inflammation exists 1/5 per cent solution is used, rapidly increasing to 1 per cent. It should be injected 5-6 times daily after voiding.

In discussion Dr. F. J. Clancy stressed the value of frequent applications of mercurochrome. Dr. O. A. Nelson mentioned the necessity for establishment of free drainage, also the overrated value of urotropin. Dr. Whitlow said that any germicide which penetrates the cells must have some effect in destroying the very necessary local resistance, thus leading to possible later trouble. He mentioned the irritant qualities of mercurochrome in acute urethritis. Dr. R. Jones suggested that in urethritis mercurochrome is best used by proxy.

#### LEWIS COUNTY MEDICAL SOCIETY

Pres., R. H. Campbell; Secty., Rush Banks

Lewis County Medical Society held a meeting at the St. Helen's Hospital, Chehalis, April 13.

The program consisted of an address by Dr. Arthur C. Crookall, of Seattle, on some diseases of the colon and rectum. Mr. Robert O. Jones, secretary of the Public Health League, gave an address on "Health Legislation in the State of Washington."

#### LINCOLN COUNTY MEDICAL SOCIETY

Pres., L. F. Wagner; Secty., C. S. Bungarner

Lincoln County Medical Society held a meeting at Harrington, April 12.

The following officers were elected for the ensuing year: President, Dr. G. H. Howard, Sprague; Vice-President, Dr. F. W. Milburn, Reardon; Secretary-Treasurer, Dr. J. E. Bittner, Sprague.

#### PIERCE COUNTY MEDICAL SOCIETY

Pres., W. B. McCreery; Secty., W. B. Penney

The regular meeting of Pierce County Medical Society was held at Tacoma, Wash., March 24, at the Jason Lee Intermediate School. It began with a dinner for the doctors and their wives, followed by an inspection of the new school building.

In the Assembly Hall, Dr. E. A. Layton gave a very excellent paper on "The School Health Program," illustrated with many charts and specimen reports. The work of the school health authorities, as shown by Dr. Layton's reports, is certainly commendable, and the doctors were agreeably surprised at its scope.

Mr. William F. Geiger, Superintendent of Schools, delivered a short address. A paper was read by Dr. W. D. Read. Dr. D. H. Bell read a paper on "Conservation of Vision." Discussion ensued and the society passed a vote of thanks to Dr. Layton and his co-workers for a very interesting and profitable evening.

## SPOKANE COUNTY MEDICAL SOCIETY

Pres., G. A. Downs; Secty., R. L. Rotchford

Spokane County Medical Society held its bimonthly meet at Spokane, April 9. President Geo. Davis presiding.

Drs. Lawrence Selling and F. B. Kistner, of Portland, read papers on the symptoms of dizziness, emphasizing the serious symptoms of eye, ear and brain trouble.

## PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

Pres., J. S. Davies; Secty., M. J. Morris.

The Puget Sound Academy of Ophthalmology and Oto-laryngology held its regular monthly meeting at the Virginia Mason Hospital, Seattle, April 21, at 8 p. m., Dr. J. S. Davies, President, presiding. Twenty-four members and three visitors were present. The minutes of the last meeting were read and approved.

A case of herpes zoster ophthalmicus was reported by Dr. Frederick Adams. Along the ophthalmic branch of the fifth nerve it had lasted for five weeks, when the right cornea became involved followed by glaucoma. The eye is unsightly and its sight is lost. Dr. Adams asked whether enucleation is desirable. The case was discussed by Drs. Pontius, Greenstreet and Perry.

A case was presented by Dr. H. F. Macbeth. Seven weeks ago the patient sustained a fracture of the floor of the orbit and since that time has had diplopia several times a day, whenever the nose was blown. Following the submucous resection of the septum no further displacement of the eyeball occurred. The case was discussed by Dr. Pontius.

The paper of the evening was by Dr. R. W. Perry on "Frontal Sinus And Its Treatment." He advised complete nasal treatment before attacking either the frontal nasal duct or the sinus. He resects the septum if necessary and then, with a Ballenger heavy, blunt, submucous dissector, fractures and presses out of the way the middle turbinate, exposing the ethmoids. Any diseased cells are now broken down with this instrument. In the external operation, the incision is made through the eyebrow. The external wound is used to assist in making large the opening into the nose, and is usually closed up at once, and no deformity results. The inner and posterior walls of the nasal duct are left untouched, while the enlargement is made forward and outward, breaking if possible into the agger nasi cell. In only the small sinuses is any attempt made to obliterate the sinus by granulation. Each member present was called upon to discuss his method of frontal sinus treatment.

Drs. Francis Brugman, of Seattle, and A. W. Howe, of Tacoma, were elected to membership.

## IDAHO

## IDAHO FALLS MEDICAL SOCIETY

Pres., E. A. Cantonwine; Secty., J. W. West.

Idaho Falls Medical Society held a meeting at Idaho Falls, Idaho, April 3.

Senator C. S. Moody, M. D., the guest of the evening, gave an interesting address on the action of the last legislature, regarding the bills concerning the practice of medicine, osteopathy and chiropractic.

The following officers were elected for the ensuing year: President, H. L. Willson; Vice-president, William Kinnaird; Secretary-Treasurer, J. W. West. Delegates to state convention: E. A. Cantonwine and H. S. Willson; alternates, T. C. Hollister and J. W. West. Board of nominating committee of state association, H. D. Spencer; alternate, A. R. Soderquist.

## MONTANA

## FERGUS COUNTY MEDICAL SOCIETY

Pres., A. C. Biddle; Secty., E. A. Weldon

Fergus County Medical Society held a meeting at Lewistown, April 7, Dr. A. C. Biddle in the chair. Seventeen members were present. Dr. E. F. Ross, of Harlowton, gave an interesting address on infantile paralysis. There was much discussion of the annual meeting of the state association to be held in Lewistown in July. Reports from committees indicated that this would be one of the best meetings that the association has held.

**New Indian Hospital.** It is announced that an Indian hospital will be built at Fort Peck under the supervision of the Bureau of Indian Affairs. It will provide for twenty-four patients and will cost \$20,000.

## SOUTHEASTERN MONTANA MEDICAL SOCIETY

Pres., R. H. Beach; Secty., M. T. Pfinder

Physicians of Southeastern Montana met at Miles City, March 28, and reorganized the Southeastern Montana Society that went out of existence several years ago. Dr. A. J. Carlson of the University of Chicago, was the special guest of the meeting and was the principle speaker on this occasion.

The following officers were elected for the ensuing year: President, R. H. Beach, Glendive; Vice-President, G. T. Haywood, Forsyth; Secretary-Treasurer, M. T. Pfinder, Miles City.

## BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

**Medical Education.** A Comparative Study. By Abraham Flexner. Cloth. 334 pp. The Macmillan Co. New York, 1925.

The present volume attempts a comparative study of medical education here and abroad and endeavors to discuss general principles and tendencies. The work of Flexner in studying and classifying the medical schools of this country is well known. In this book there are chapters on types of medical schools, general education, basic sciences and modern languages, the curriculum here and abroad the laboratory sciences and the conception, equipment and teaching of them, the clinics and the conception, equipment and teaching of them, and finally institutes for research, and a chapter on costs. The author

states that Germany led the medical world prior to 1910 and that her method of making medical schools a part of the university curriculum and so stimulating scientific and research work in medicine was largely the cause.

He deplores the lack of knowledge of French and German in our medical students, which is almost universal. He also notes the tendency, formerly prevailing, of medical schools having their graduates continue as instructors. In the reviewers' day at Harvard there was scarcely a teacher in the school who was not a graduate and the reviewer lost little time in taking advantage of this custom himself. It is a custom that tends toward provincialism and incompetence unquestionably. The matter of the full-time professor in medical schools, especially clinical teachers, has not yet been wholly thrashed out. Perhaps the most satisfactory is that of Harvard, where paid consultations are allowed at the hospital and not outside.

The different present day methods of educating the medical student in various countries is described in detail. One of the very best signs of proper training in this country is the fact that in 1922, of 2,452 medical graduates, 2,265 became interns in some sort of hospital. In Canada in the same year only 56 per cent of the graduates became interns. The book is a scholarly, thoughtful presentation of the subject and has involved an immense amount of study and sifting of material.

WINSLOW.

**Clinical Aspects of the Electrocardiogram.** A Manual for Physicians and Students, by Harold E. B. Pardee, M. D., Associate in Medicine, Cornell University Medical School, etc. With 56 Illustrations 222 pp. \$4.00. Paul B. Hoeber, Inc., New York, 1924.

The author has given a summary of the clinical value of the electrocardiograph in the interpretation of heart disease, attempting to bring to date present knowledge of its interpretation and prognostic importance. He has largely left out the details of experimental and theoretical considerations, though the main points are touched upon. Controversies have not been discussed in detail but opinions which seem most sound have been presented, with a statement of the opposing views. It is interesting to one who has studied electrocardiography since its clinical beginning to see the contrast between Pardee's book and that of Lewis ten years ago. Lewis made a detailed study of the arrhythmias and it must be confessed that nothing of importance has since been added to our knowledge of this subject. Pardee gives approximately one-quarter of his book to the arrhythmias.

He discusses at considerable length electrocardiographic changes with myocardial disease and gives a clear exposition of present views regarding the interpretation from the electrocardiograph of myocardial damage. He established quite conclusively that the instrument is of great value in interpretation of myocardial changes not otherwise diagnosable. He is first a clinician and then a laboratory man. He recognizes that the electrocardiograph is

a very valuable adjunct in cardiology, one without which it is impossible to make a complete study of the human heart, and that the information given by it cannot be obtained in any other way. On the other hand, it replaces none of the usual clinical study of the patient, but is information directly added to such study. He has done the profession a service in collecting in brief form for the clinician the present status of electrocardiography.

J. M. BLACKFORD.

**Pseudo-Appendicitis.** A study of Mechanical Syndromes of the Right Lower Quadrant Simulating Appendicitis. By Thierry de Martel, Chirurgien des Hopitaux de Paris and Edouard Antoine Medecin des Hopitaux de Paris. Authorized translation from the French by James A. Evans, A. B., M. D., formerly Assistant Radiologist, Hopital St. Antoine, Paris. Illustrated with 41 engravings. 211 pages, \$3.00. F. A. Davis Co., Philadelphia, 1925.

The frequency of unsatisfactory results following operation for so-called chronic appendicitis in the past has led to a more careful investigation of the causes of symptoms leading to this diagnosis. The present work is a careful analysis of these causes with an outline of medical and surgical treatment. The diagnosis of "chronic appendicitis" is one of the most difficult in the field of abdominal pathology, and one that would be made but rarely where there existed proper understanding of the causes of pain in the right flank.

Connell says in his foreword: "If the numerous operators in this country could be induced to read and study this small but important book, much would be accomplished toward transforming them into surgeons, and would bring about a realization of the fact that chronic appendicitis and pain in the right side, either with or without gastrointestinal symptoms, are not synonymous; that instead of being the simplest abdominal surgical condition, it is one of the most complex, and is, therefore, worthy of study, serious study, **before** and not **after** the removal of the so-called chronic appendix."

FORBES.

**Feeding, Diet and the General Care of Children.** A book for mothers and trained nurses. By Albert J. Bell, A. B., M. D., Assistant Professor of Pediatrics in the Medical Department of the University of Cincinnati, etc. Second Revised Edition. Illustrated. 290 pages, \$2.00. F. A. Davis Co., Philadelphia, 1924.

The author has succeeded in his expressed purpose to make this book "educational." If one is inclined to resent the elementary nature of the text and the brevity of detail, he has only to remember that it is written primarily for mothers and nurses. In the chapters discussing the sick child the author has wisely omitted discussion of treatment, the province of the physician.

The chapter dealing with breast feeding is sane but too short. The author by his brevity loses an opportunity to make his views more emphatic. His tables of formulas have the advantage of simplicity. In this, and in the recommendation of the four hour feeding interval, he is in agreement with the present

# Portland Surgical Hospital



The Portland Surgical Hospital, 611 Lovejoy St.  
Mrs. Tom Richardson, *Superintendent*

# Portland Convalescent Hospital



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concensus of opinion among pediatricists. Development and food value tables are adequate to the purposes of the volume and the illustrations, though few, are pertinent. The headings are well arranged and the subject matter, by its brevity, seems to stimulate the curious, to give essential facts to the lethargic. And this after all is a function of education.

McCOWAN.

**The Surgical Clinics of North America.** (Issued serially, one number every other month.) Volume V, Number 1. (New York Number—February, 1925, 294 pages with 142 illustrations. Per clinic year (February 1925 to December 1925). Paper, \$12.00; Cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company.

In this volume leading New York surgeons present clinical reports on a great variety of subjects which may tally with the experiences of any active surgeon. Coley describes the histories of sixteen cases of sarcoma of the long bones, most of which are recorded as recoveries or improvements for a period of years. The essential treatment of all is the administration of the mixed toxins and radium treatment. Conservatism is the pronounced factor in all these cases. Moorhead discusses various aspects of traumatic fractures. He obtains extension in all cases of fractured femur by means of the transfixing nail above the condyles, except where the parts are not separated, displaced or overlapped by their own fragments. He does not use the Thomas splint or any apparatus to keep the limb in position except a pillow under the knee or tilt of the bed, since traction is all sufficient. Many other valuable suggestions are obtainable from this volume.

**Abt's Pediatrics.** By 150 specialists. Edited by Isaac A. Abt, M. D., Professor of Diseases of Children, Northwestern University Medical School, Chicago. Set complete in eight octavo volumes totaling 8000 pages with 1500 illustrations, and separate Index Volume free. Now ready, Volume VI containing 736 pages with 127 illustrations. Philadelphia and London: W. B. Saunders Company, 1925. Cloth, \$10.00 per volume. Sold by Subscription.

It would be difficult to speak in terms too laudatory of this volume. A glance at the list of contributors guarantees its essential worth. The introduction of such chapters as the ones on Body Temperature and its Regulation, Anesthesia in Children, Surgery in Childhood, and Fetal Malformations, shows the completeness and range of the subject matter. The acute infectious group is treated with a thoroughness as to etiology, pathology and therapy that leaves little to be desired. The historical treatments, Oslerian in their literary excellence, are particularly welcome in a day when medicine has shown a tendency in some quarters to forget or look a little contemptuously on its past. The chapters on smallpox and vaccination are particularly appropriate to present day conditions and might be read to advantage by every one interested in community hygiene. The extensive bibliography shows the profundity of preparation that has gone into this volume to make it authoritative.

McCOWAN.

**The Technic of Local Anesthesia.** By Anthony E. Hertzler, A. M., M. D., Ph. D., Ll. D., F. A. C. S. Professor of Surgery in the University of Kansas, etc. Third Edition. With 140 Illustrations. 272 pp. \$5.50. The C. V. Mosby Co., St. Louis. 1925.

The author presents his own technic in the use of local anesthesia. Two previous editions have familiarized us with his clarity and simplicity of description and the present volume has the same virtues. Emphasis throughout is placed on the preparation of the patient, the consideration of possible difficulties, the indications for local anesthesia and operative technic. We know of no work presenting the essential features of this form of anesthesia so effectively in so small a space.

FORBES.

**Clinical Medicine for Nurses.** By Paul H. Ringer, A. B., M. D. Chief of Medical Service of the Asheville Mission Hospital, Asheville, N. C., Etc. Illustrated. Second Revised Edition. 306 pp. \$2.50. F. A. Davis Company. Philadelphia. 1924.

This is an excellent book for the instruction of nurses. The author states that in the usual book of this kind there is insufficient detail, while textbooks on medicine are too elaborate for the average nurse. He wisely presents in some detail the essential facts of different diseases, omitting under treatment the details which belong to the attending physician. At the same time, measures which the nurse should employ are described in a comprehensive manner. While little space is devoted to treatment of most conditions, thirteen pages are given to it in the consideration of tuberculosis, dealing largely with the management of hygienic and dietetic conditions.

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## ORIGINAL CONTRIBUTIONS

### THE VARYING MECHANISM OF UTERINE BLEEDING\*

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My selection of a topic for this address was based upon two considerations. First, no subject is of greater interest and importance to both the general practitioner and the specialist in gynecology; second, the etiology of uterine bleeding is so varied that its consideration opens up more avenues for discussion than almost any other that might be selected.

The common subdivision of uterine bleeding into menorrhagia and metrorrhagia is based not only on considerations of convenience, but also upon a recognition of the fact that mere menstrual excess is likely to be due to causes which are quite different from those causing uterine bleeding not in any way related to menstruation. With regard to menorrhagia, it would be almost a truism to say that the cause is usually to be sought in a disturbance of some one or other of the factors concerned in normal menstruation. Metrorrhagia, on the other hand, might readily be caused by factors not in any way related to the normal menstrual mechanism.

\*Read before the Academy of Medicine, Portland, Ore., April 23, 1925.

To this generalization there are, of course, some exceptions, and, furthermore, cases are encountered which it is difficult to place under either of these two heads. For this reason, cases of uterine hemorrhage may conveniently be divided into three groups, as follows:

1. *Cases in which the bleeding is easily explained on a purely anatomic or structural basis.* This group is perhaps best illustrated by the bleeding so characteristically seen with *malignant disease*. Here the actual breaking down of tissue and the direct rupture of bloodvessels furnish a simple and obvious explanation of the bleeding. In such cases it is not necessary to invoke a disturbance of any of the physiologic links in the menstrual chain, for such bleeding is explainable on the same basis as hematemesis from gastric cancer, intestinal hemorrhage from cancer of the bowel, etc. Were any proof of such a statement needed, it would be furnished by the fact that uterine hemorrhage from cancerous disease is so commonly observed in women far beyond the menopausal age. The mechanism under discussion applies to cancer of the cervix, cancer of the body, or cancer of the vagina. The most common of these causes is, of course, cancer of the cervix.

Squamous cell carcinoma is far more common than adenocarcinoma of the cervix. Furthermore, the squamous cell variety, since it develops on the pars vaginalis of the cervix, is much more exposed to traumatic influences, so that bleeding is

apt to be a very early symptom. Adenocarcinoma of the cervix, on the other hand, usually arises within the cervical canal and is much better protected from external influences. Bleeding is, therefore apt to be a somewhat later symptom than in the other type. This statement is even more applicable to adenocarcinoma of the fundus, which is much the least malignant of the three chief types of uterine carcinoma. Indeed, menorrhagia is apt to be a symptom for a considerable time before the appearance of the intermenstrual bleeding which is so much more characteristic of ulceration. Sooner or later, of course, breaking down occurs in all forms of carcinoma, no matter how well shielded from external influences. In the case of corporeal cancer, it may be added, a monthly flare-up of the bleeding in patients still within the menstrual age is readily explainable by the fact that the cancerous disease is in a tissue which, unlike the cervix, undergoes the cyclic changes of menstruation.

In addition to carcinoma, there are a few other causes of genital bleeding of the purely anatomic type. Sarcoma is rare, but, when it occurs, produces ulceration and hemorrhage. In the grape-like sarcoma seen at times in very young children, bleeding is usually the presenting symptom. *Polypi* of the uterus are a far more common cause of bleeding. This is particularly true of polypi of the cervix. While usually small, these may cause annoying bleeding of the nonmenstrual type, for they often undergo ulceration, as can readily be seen on histologic examination. Polypi in the uterine cavity, on the other hand, are often present without bleeding of any kind. When large, of course, they tend to deliver themselves through the cervix, with resulting ulceration and bleeding. This applies to both the simple endometrial polyp and the pedunculated myoma. In either case, menorrhagia is likely to be present a considerable time before intermenstrual bleeding makes its appearance.

Simple ulceration without neoplastic disease is uncommon in the generative tract, except in connection with prolapse of the uterus. The eversion of the vagina, seen with this condition, is often associated with erosion and ulceration of the cervix and vaginal wall. Bleeding is thus produced, though usually slight in amount. Finally, the intense congestion often seen with a marked endocervicitis, especially in cases of cervical laceration with ectropion, may be the cause of bleeding after coitus, during the straining of defecation, or after severe exertion.

2. *Cases in which both anatomic and physiologic factors are concerned in the bleeding.* This group, which is a large one, comprises those cases in which, while definite pelvic disease can be demonstrated, the bleeding can not be explained by this alone. Combined with the pelvic lesion there must be another factor, that of abnormal function. The vagueness of this statement may be lessened by illustrating with the most frequent of the pelvic lesions comprised in this group, *chronic adnexitis*. It is a well-known fact that inflammation of the adnexa is often associated with menorrhagia and at times with metrorrhagia. This was formerly explained as due to the pelvic congestion associated with this lesion. As a matter of fact, however, there is little or no hyperemia in many cases of old inflammatory disease, even though menstruation be quite excessive. On the other hand, in the acute stage, when there is a very genuine hyperemia, menstruation is often not excessive, and not infrequently may be inhibited altogether. Again, uterine bleeding is not observed in women with pelvic inflammatory disease who pass beyond the menopause without operation.

Hitschmann and Adler are probably correct in their assertion that excessive menstruation is noted only in those cases of adnexal inflammation in which the ovary is definitely involved in the process, so that hyperfunction results. It seems fair to assume that the same rule would apply to other forms of adnexal involvement, such as ovarian tumors, and perhaps even to uterine displacements. It is even possible, though not as yet susceptible of proof, that the bleeding of uterine *myomata* is largely of "functional" nature. Whether the functional abnormality consists of an excess of ovarian activity or whether there is some local biochemic change brought about in the endometrium is a matter of speculation, but certainly the mere mechanical influence of fibroid tumors does not seem to explain altogether their vagaries as to bleeding. That the mechanical factor, especially the pressure upon the endometrial veins, plays some part can not be denied, but it seems probable that a biochemic change in the endometrium, possibly due to a functional disturbance of the ovary, may also be involved in the abnormal bleeding.

Another type of anatomicphysiologic bleeding is that seen in various conditions associated with pregnancy. With the purely obstetric forms of hemorrhage we shall not deal in this paper. Perhaps the most common of all causes of uterine hemorrhage

encountered by the gynecologist is the *retention of gestation products* following full-term delivery, or, more often still, following abortion. The mechanism here, at first thought, seems simple enough. The separation of the placenta from the uterine wall entails the opening up of blood spaces with at times profuse hemorrhage. The latter symptom, however, may continue for many days or even weeks after the throwing off of the embryo. In these cases a greater or less number of the chorionic villi are left attached to the uterine wall, and it is the presence of this tissue which keeps up the bleeding. And yet the surface of the uterus may be comparatively smooth, as a small amount of chorionic tissue may be thoroughly incorporated into the endometrium. There are good reasons for believing that the bleeding in such cases is due, at least in part, to physiologic factors, emanating from the retained trophoblastic tissues. The same mechanism is even better displayed in connection with the bleeding of ectopic pregnancy, under which heading it will be discussed more fully.

Among the most interesting of all the causes of uterine bleeding is *tubal pregnancy*. The classical history of a delay in the menstrual period, followed by persistent though perhaps scanty bleeding with pain, is often observed, but not by any means invariably. The abnormal bleeding may begin shortly after a menstrual period, without the occurrence of any amenorrhea at all. On the other hand, there are certain cases of ectopic pregnancy in which there is no vaginal bleeding whatsoever. I have personally observed a considerable number of such cases, some of which were reported in a recent paper by Darner and myself. In this study we found that, practically without exception, those cases of tubal pregnancy where there is no external bleeding are cases in which the embryo is still alive. This is true even when the abdomen, perhaps, is full of blood. In a recent case of my own, for example, the symptoms suggested a subacute appendicitis except that there had been amenorrhea for two months, with occasional faintness and nausea. These symptoms, together with the existence of marked tenderness and an indefinite mass in the right side of the pelvis—the patient was very obese—suggested the diagnosis of a right tubal pregnancy, with a live embryo. This was confirmed at operation.

The appearance of vaginal bleeding in cases of tubal pregnancy, speaking generally, may be taken as indicative of the death of the embryo. Slight bleeding, it is true, may occasionally be noted with

a continuing pregnancy, as in the case of uterine gestation, but persistent bleeding, in our experience, means that the fetus has succumbed. The overwhelming majority of our tubal pregnancy cases are, of course, of this type; that is, they are characterized by vaginal bleeding as one of the symptoms. In these cases, especially when initial amenorrhea has been very short or absent altogether, the usual rule is to find no gross evidence of the embryo in the pregnant tube. Microscopic examination, however, practically always shows chorionic tissue still present in large amount in the tube wall. In other words, a tubal abortion is practically never a complete one, and this has some significance from the standpoint of the associated uterine bleeding. The death of the embryo, as was shown in our recent paper, brings about a separation of the uterine decidua, so that the latter is thrown off from the uterus, either as a complete cast or in smaller particles. This casting off of tissue is associated with the opening up of blood vessels, thus explaining at least the initiation of the external bleeding.

On the other hand, this process can not conceivably explain the bleeding which so often continues for many weeks. The uterine surface is restored very promptly after the separation of the upper decidual layers, so that it is probably complete within a very few days. This can be easily demonstrated by either naked eye or histologic examination of the endometrial surface in the ordinary case of tubal pregnancy, where bleeding has been present a long time. How, then, can we explain this bleeding through an intact mucosa? No other explanation seems possible than that the endometrial vessels are in some way made more permeable by some biochemic factor present in the mucosa. It is also difficult to avoid the explanation that the source of this factor is to be sought in the trophoblastic elements which persist in the tubal wall. This is made more probable by the fact that the endometrial bleeding stops quite promptly after the removal of the pregnant tube. In a small group of cases, as Polak states, it is possible that the vaginal bleeding may have its source in the tube, the blood making its way into the uterus through the uterine end of the tube. This explanation would apply more particularly to the cornual types of pregnancy, but would seem improbable with the more common varieties.

3. *Cases of bleeding where no demonstrable anatomic lesion exists.* This group is in many ways the most interesting of the three. It has to do with

cases of bleeding, where pelvic examination yields findings which perhaps are entirely normal. For example, profuse bleeding may be noted even in the case of young girls at or near the age of puberty, in whom the pelvic organs appear to be perfectly normal. Similar bleeding may occur at any age during the reproductive life of the woman, but is much more common during the menopausal years. In a word, we are here concerned with bleeding of a type which has in the past been variously spoken of as "idiopathic," or "essential," or "functional." There have been many explanations offered as to the cause of bleeding of this type. The history of the subject has been fairly well reviewed in a recent paper by Martzloff and myself. The feature of greatest significance in such cases is that in a large proportion the endometrium presents a very characteristic picture which has been designated as hyperplasia of the endometrium. This condition was first described by Cullen as far back as 1900 and given its name in 1909. It has, however, never received the attention to which its importance entitles it, for it is undoubtedly one of the most interesting of all endometrial lesions. The condition was rediscovered by Schröder in 1915 and, quite interestingly, given the same name as that originally bestowed by Cullen.

The term hyperplasia has been applied to this condition because there is apparently a genuine hyperplasia of both the epithelial and stromal elements of the endometrium. The epithelium is at times more than one layer thick, and the cells show heavily staining nuclei. The stromal hyperplasia is indicated by the frequent presence of mitoses and the general overabundance of stroma not uncommonly seen. Perhaps the most characteristic feature, however, is the gland pattern. Many of the glands are large and cystic, these often being side by side with others which are quite small and undilated. There is thus produced a very characteristic pattern—what we have called the "Swiss-cheese pattern." Altogether, the picture is so characteristic that in most cases it can be recognized by the merest glance through the microscope.

Speaking generally, the finding of hyperplasia of the endometrium permits us to state quite definitely that bleeding had been a clinical symptom. Most characteristically the bleeding takes the form of menorrhagia, although at times metrorrhagia may be seen. The latter symptom, however, may be more apparent than real, as the menstrual periods may be so prolonged that one blends with another,

thus producing the semblance of metrorrhagia. According to the recent study of Martzloff and myself, about one-half of all cases are seen at or near the menopause, about 5 to 10 per cent in young girls at or near the puberty age, while the remainder are seen at practically any age between puberty and the climacterium. The condition, so far as we know, has no tendency toward malignancy, but in some cases the bleeding may be very intractable. So common is hyperplasia in cases of menorrhagia where the pelvic organs are normal, that the failure to find it should make us suspect that some anatomic cause has been overlooked. On the other hand, it seems to be true that in a certain proportion of cases of bleeding without gross disease the endometrium may be perfectly normal.

Just what the factors are which determine the involvement or noninvolvement of the endometrium, in cases which otherwise are presumably of the so-called functional type, can not as yet be stated. Perhaps the difference lies in the fact that the functional disorder affects different links in the menstrual chain. The question is now being studied in our laboratory, and in a preliminary way it seems certain that the hyperplasia cases far outnumber those in which the endometrium is normal. Certainly it is true that in the otherwise normal woman, especially at the menopause or near puberty, the occurrence of profuse and usually painless menorrhagia should lead us to look for hyperplasia in the uterine scrapings. In a minority of cases only will one be disappointed in this expectation.

Since there is such a characteristic lesion of the endometrium associated with this type of bleeding, it seems almost paradoxical to speak of it as functional in type. And yet there is much evidence to indicate that the endometrial change represents merely a response to an abnormal function of the ovary. For example, hyperplasia is found, generally speaking, only during the menstrual life of the woman. Again, the condition often recurs after curetting, evidently because the ovarian functional disturbance is still persistent. Moreover, bleeding due to hyperplasia is controllable by either x-ray or radium in sufficient dosage, such measures abolishing the ovarian function.

From a practical standpoint, especial stress should be laid upon the great frequency with which menopausal bleeding is due to hyperplasia. In the campaign of popular education against cancer, women are very properly warned that abnormal bleeding at this epoch of life should always be investigated,

as it often means cancer. When of the common squamous cell cervical type, cancer of the uterus can usually be recognized, or at least strongly suspected, by the findings on mere speculum inspection and palpation. When the cancer is of the less common internal type, especially the adenocarcinoma of the fundus, diagnosis is possible only by curettage and microscopic examination of the curettings. The point I wish to emphasize is that in these cases, where the diagnosis is not possible by simple inspection and palpation, the diagnostic curettage will reveal the perfectly benign condition of hyperplasia considerably more frequently than the malignant adenocarcinoma.

While, therefore, we should continue to impress upon women the importance of abnormal bleeding at the middle period of life, we are justified in emphasizing also that in a large proportion of cases, even of those where some obviously benign cause is not present (myoma, pelvic inflammatory disease, etc.), the proper sort of study will show an absence of cancerous disease. There is thus injected into the rather sombre cancer situation a ray of hope which I believe will constitute a genuine advantage, as it will bring to examination a certain number of women who perhaps dread to come because of the fear that they will be found to have cancer.

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26 E. Preston St.

**Acute Toxic Encephalitis of Nasal Sinus Origin.** One of the patients whose case is reviewed by E. T. Gatewood, Richmond, Va. (*Journal A. M. A.*, May 16, 1925), was evidently suffering from a mild progressive toxic encephalitis secondary to the suppurative ethmoiditis, probably by direct continuity. The second case suggests a violent toxic absorption. Gatewood says that cases simulating this picture frequently lead to brain operations with disastrous results. Patients manifesting such symptoms should emphasize the importance of a careful rhinologic examination. As the symptoms are toxic in nature, the improvement may be sudden or gradual after the eradication of the septic focus.

## SOME FUNDAMENTAL PRINCIPLES IN THE DIAGNOSIS AND TREATMENT OF DIABETES MELLITUS\*

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#### DEFINITION

It is generally believed that diabetes mellitus is a disease of metabolism, in which the utilization of carbohydrates is impaired, this impairment being a result of disease of the islands of Langerhans with consequent deficient internal secretion of insulin. The sugar content of the blood not being properly used is increased. There is also glycosuria and a tendency to lipemia and ketosis. Over against this prevalent view concerning the part the internal secretions of the islands of Langerhans plays in diabetes, Oertel<sup>1</sup> claims there is much evidence that not the islands but the pancreas as a whole is concerned in sugar metabolism.

#### ETIOLOGY

The cause of this disease is still an unsolved problem. Obesity, however, according to Joslin,<sup>2</sup> is present in a large majority of cases. Ninety per cent of all patients with diabetes in America are overweight. Children of obese parents who have diabetes often inherit the disease. This, he says, is true in almost 20 per cent of the cases. He also claims that the Jewish race is disproportionately subject to the disease, because obesity is so common among them.

Nervous strain may bring on a latent diabetes. Arteriosclerosis is supposed to interfere with the function of the pancreas by curtailing its blood supply, hence may be an etiologic factor. On the other hand, arteriosclerosis may develop as a complication of diabetes.

Syphilis of the nervous system often causes a transient glycosuria, but in contrast to this an occasional syphilitic patient will give a clinical picture simulating diabetes mellitus which will clear up with antiluetic treatment.

Paulen and Babcock<sup>3</sup> have recently reported a case of this kind.

Pregnancy increases the permeability of the kidney, causing a renal glycosuria in many cases. Diabetes may even make its appearance during a pregnancy, but pregnancy, according to Joslin, has not yet been proven a cause.

Diseases, such as acute or chronic pancreatitis,

\* Read before Central Willamette Medical Society, Ore., March 5, 1925.

carcinoma, calculus, etc., destroying pancreatic tissue, are not necessarily followed by diabetes. Diabetes is not manifest unless the islands are involved.

Glycosuria with hyperglycemia is not always an evidence of diabetes mellitus. There are several other conditions in which this syndrome may be present, of which the following are examples.

1. Alimentary glycosuria which appears normally after consumption of large quantities of carbohydrates, e.g., more than 150-180 grams of glucose.

2. After emotional disturbances, such as mental depression. Students have been known to have glycosuria after a difficult examination. Temporary glycosuria has been found in players and spectators at a football game. Cannon explains this as due to an increased secretion of the adrenal glands brought on by emotion.

3. Sometimes in well marked cases of hyperthyroidism. Hirschman has demonstrated blood sugar curves resembling those in diabetes mellitus, which became normal after a portion of the thyroid gland had been removed. In myxedema, on the other hand, carbohydrate tolerance is increased.

4. In pituitary diseases, especially the early stages of acromegaly. Overactivity of posterior lobe of the hypophysis results in diminished carbohydrate tolerance and glycosuria.

5. Sometimes in diseases of the central nervous system, as paresis, brain tumor, cerebral hemorrhage, skull fracture, tabes, cerebrospinal meningitis. "Piqure" may be mentioned here. Claude Bernard discovered that by puncture of the floor of the fourth ventricle a temporary glycosuria was set up, if the liver at the time contained glycogen. This glycosuria differs from the glycosuria of diabetes, since the former is due to a rapid mobilization of glucose from glycogen in the liver, while the latter is the result of the inability of the tissues to utilize the glucose in the blood stream.

6. In certain cases of obesity, possibly due to pituitary disorders.

7. In some patients with gout.

8. After certain poisons, such as morphine and cocaine.

Glycosuria without hyperglycemia occurs in the following:

1. Renal glycosuria.
2. At times after administration of diuretics, such as diuretin, caffeine, and theocin.
3. After administration of phloridzin.

#### DIAGNOSIS

From the foregoing it is evident that such causes of glycosuria as lesions of the central nervous system, hyperactivity of the endocrine glands, excitement, drugs and also lactosuria in pregnancy should be eliminated in making a diagnosis of diabetes mellitus. After this has been accomplished, we have still to differentiate between diabetes mellitus, renal glycosuria and lag glycosuria.

It is known that the normal individual has a fairly constant sugar content in his blood in the morning after the fast of the night. This is called the normal fasting level and varies in different individuals from 80 to 120 milligrams of glucose per 100 c.c. of blood.

If 100 grams of glucose is ingested on a normal fasting stomach and blood sugar determinations are made every half hour and plotted, it will be found that a typical curve will be formed which is known as the normal blood sugar curve. This curve will show a sharp rise and will reach its height in the first one-half to three-fourths of an hour, and then fall constantly until it has reached the fasting level by the end of one and one-half to two hours.

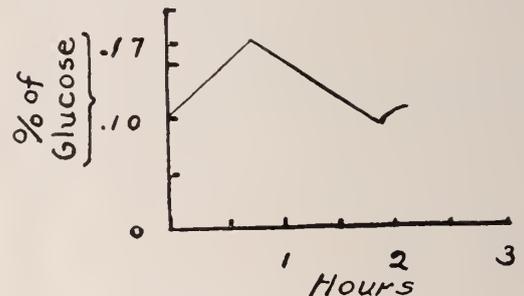


Fig. 1. Normal blood sugar curve.

The best time to obtain a blood sugar curve is on a fasting stomach before breakfast because an excess of free fat in the blood interferes with absorption of glucose by the tissues.

Calvert<sup>6</sup> reports the following experiment to illustrate the influence of blood fat on the blood sugar curve.

(A) A normal man thirty years of age was given 50 grams of glucose on a fasting stomach at 9 a.m. Curve A in fig. 2 was the result.

(B) On the following day the same amount of glucose was mixed with 2 oz. of butter and given under the same conditions. Curve B in fig. 2 resulted.

(C) On the third morning at 5:30, 2 oz. of butter were given and at 9 a.m., the butter having been absorbed into the blood stream, 50 grams of glucose was given. Curve C in fig. 2 was obtained.

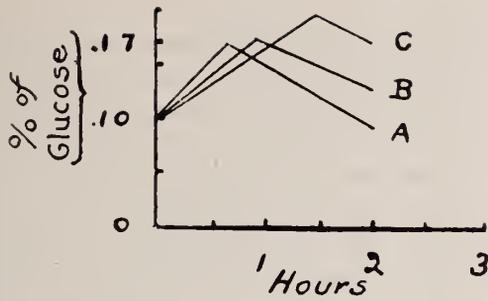


Fig. 2. Shows the influence of blood fat on the blood sugar curve.

The blood sugar curve in diabetes reaches a higher level than normal and takes a longer time to subside. This is illustrated in fig. 3.

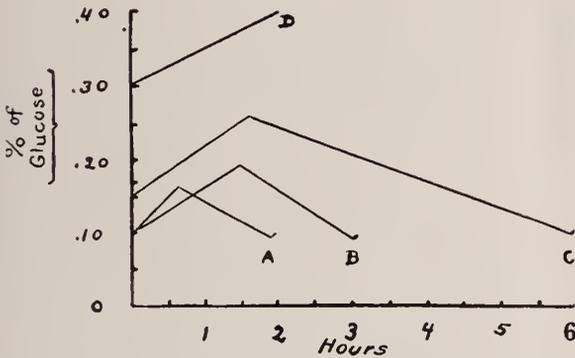


Fig. 3. A, normal blood sugar curve; B, the blood sugar curve of a patient with mild diabetes; C, moderate diabetes; D, marked diabetes.

The threshold is that concentration of glucose in the blood, at which sugar begins to appear in the urine. The normal threshold is about 170 milligrams of glucose in 100 c.c. of blood. In diabetic patients the threshold tends to be higher than normal.

In renal glycosuria the threshold is low, e.g., .14 per cent or even as low as .08 per cent. The blood sugar curve is normal but there is glycosuria when the glucose concentration in the blood is above this threshold. If the threshold is below the fasting level, there is constant glycosuria which is increased when the blood sugar is raised.

In lag glycosuria the blood sugar rises above the renal threshold, which is normal but returns to the fasting level in the normal time. During the time the blood sugar is above the threshold there is glycosuria (fig. 4).

These different types of glycosuria may often be determined by urinalysis, as follows: (1) At

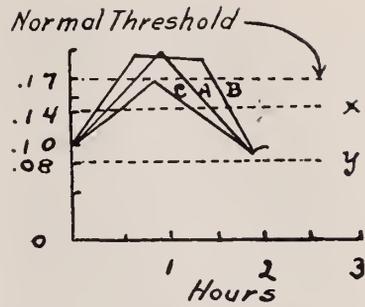


Fig. 4. Shows lag glycosuria with a normal threshold.

(Curves A and B are those of lag glycosuria with a normal threshold. Curve C illustrates that of renal glycosuria with the threshold at X or Y. There is constant glycosuria, if the threshold is at Y.

6 a.m. patient voids his urine and discards it. (2) At 8 a.m. he empties his bladder again and saves urine for specimen A. (3) He then takes 50 grams of glucose. (4) At 11 a.m. he again voids all the urine from his bladder and labels this specimen B. (5) Specimen C is obtained by voiding an hour or so later and before the next meal.

If the patient has a renal glycosuria and the threshold is at Y, there will be relatively small amounts of sugar in specimens A and C (approximately 0.5 per cent or less) and specimen B will have a larger amount of sugar. If the amount of glucose ingested is doubled, the sugar in specimen B will be similar.

If the threshold is at X, specimens A and C will contain no sugar. Increase in the amount of glucose ingested will make very little difference in the amount of sugar in specimen B.

In lag glycosuria the same will be true as with renal glycosuria with threshold at X.

If the patient has diabetes and the threshold is high, there may or may not be any sugar in A. If there is no sugar in A and some appears in C, the conclusion may be drawn that it is a curve of diabetes mellitus, for the fall in concentration of blood sugar is being delayed long enough above the threshold so that sugar appears four hours after ingestion.

If the amount of glucose ingested is doubled, the amount in specimen B will be increased and accentuate the difference between specimens A and C. If in diabetes sugar appears in specimens B but not in A or C, either the diabetes is mild or the threshold is high. If the experiment be repeated the following morning, with double the glucose, then the sugar

will almost invariably appear in specimen C and in specimen B there will be a corresponding increase.

Another aid in diagnosis is the determination of lipoids in the blood. An increase in blood sugar is usually accompanied by an increase in the blood lipoids. The highest normal fat is .67 grams per 100 c.c. of blood. Gray<sup>7</sup> found that in diabetes they ranged from .70 grams to as high as 9.55 grams in 100 c.c. of blood, although most long lived patients with diabetes showed a blood fat less than 1 gram per 100 c.c. of blood. It seems that diabetes in those who store up high blood fats is so severe that these patients do not live long.

The presence of diacetic acid in the urine is strong evidence of diabetes mellitus. Blood examinations, however, are required for this diagnosis. If the fasting level is higher than normal, the blood sugar curve typical, diacetic acid present in the urine and there is clinical evidence of the disease, one may be fairly certain that he is dealing with diabetes. However, a confusing sugar curve may be caused by such conditions as overactivity of the thyroid, disturbance of the pituitary body, and chronic nephritis by raising the renal threshold, so that the diagnosis of diabetes mellitus is not always a simple matter.

#### TREATMENT

We may divide the subject of treatment under the following headings. (1) Preventive measures, (2) dietary management, (3) the use of insulin, (4) the treatment of coma.

1. Preventive measures. The cause of diabetes is still an open question, so that it is impossible as yet to take any direct measures for eradicating the disease. However, overeating and obesity are often associated with diabetes mellitus. Overtaxing the function of the pancreas lowers carbohydrate tolerance and brings out a latent diabetes which in many cases might not have been lighted up. The prevention here is obvious. The habit of overeating should be discouraged. Physical exercise also is known to stimulate the general metabolism and help prevent an obesity and a possible diabetes mellitus.

2. Dietary management. The amount of food required to keep a normal person in health and at the proper weight may be ascertained by calculating the patient's theoretical basal metabolism from the tables of DuBois and Aub. DuBois has published a surface area chart by which, given a person's height and normal weight, his surface area in

square meters may be determined. A table published by Aub and DuBois shows the caloric requirements per square meter of body surface. The square meters of surface area multiplied by the caloric requirements per square meter gives the total caloric requirements of the individual. A 20 per cent increase may be allowed above this figure to take care of a person's activity out of bed.

The same result may be obtained by multiplying an individual's normal weight in kilos by the number of calories per kilo required. Chittenden believes that 30 calories per kilo is all that a person needs who is engaged in a sedentary life.

Children require more according to age. Schultze<sup>12</sup> gives 100 calories per kilo up to 18 months or 2 years, and 70 to 100 calories per kilo to children from 2 to 4 years, 50 to 70 calories per kilo to children from 4 to 12 years.

A good standard of normal weights is found in the actuarial tables of 1912. Most workers in this field agree that an adult diabetic patient's weight should be at least a few pounds below normal. Fisher and Fisk have shown that after the age of 35 overweight is associated with an increasingly high death rate and that persons a few pounds under the average weight for 35 show the lowest death rate. Children, on the other hand, should be kept at their full normal weight and be fed enough to allow for growth and activity.

In determining what a diabetic patient should eat, there are certain principles to guide us: (A) Restricting total diet, (B) restricting of carbohydrates in the diet, (C) restricting the proteins in the diet, (D) balancing of ketogenic and antiketogenic substances in the diet.

A. Allan has shown that restricting the total diet lowers the metabolic rate. For this reason a patient is not given any more food than is necessary to maintain the weight desired.

B. Restricting the carbohydrates rests the pancreas and thereby increases the ability of the organism to metabolize carbohydrates.

C. Restriction of protein. Woodyatt, Shaffer and others have shown that protein stimulates body metabolism. Two-thirds to one gram of protein per kilo of body weight is sufficient for the average adult on which to maintain nitrogen equilibrium. Children, however, require two to three and one-half grams per kilo of body weight.

D. Balancing of ketogenic and antiketogenic substances in the diet. A certain ratio of carbohy-

drates to fats in the diet, spoken of as the F.A.:G. (fatty acid to glucose) ratio has to be maintained in order to insure the adequate burning of fats; otherwise, if the fats are incompletely burned, ketosis results. In other words, an excessive amount of fats in the diet predisposes to acidosis.

In order to determine the F.A.:G ratio, the following facts have to be considered. Woodyatt has shown that: 100 grams of protein yield 46 grams of fatty acid, 58 grams of glucose; 100 grams of fat yield 90 grams of fatty acid, 10 grams of glucose; 100 grams of carbohydrate yield 0 grams of fatty acid, 100 grams of glucose. Thus it is seen that fatty acids are derived from proteins as well as from fats.

Woodyatt contends that, if the ratio of fatty acids to available glucose in the diet exceeds 1.6:1, acidosis is imminent. In prescribing a diet, therefore, we must reason in terms of fatty acids and available glucose rather than in terms of carbohydrates, proteins and fats.

There has been considerable controversy as to what should be the proper ratio between the fatty acids and available glucose in the diabetic diet. Mosenthal<sup>10</sup> recommends a ratio as low as 1.2:1. On the other hand, Newberg and Marsh have found that ratios as high as 1 molecule of glucose to  $2\frac{1}{2}$  or 3 of fatty acid may, in some cases, be safely used. Wilder<sup>11</sup> contends that a F.A.:G of 2.5:1 in diabetes without complications is perfectly safe.

It must be remembered when prescribing a diet that, if the patient is not receiving an adequate maintenance diet, he will burn some of his own fat and thus alter the F.A.:G. ratio. The existence of infection also has to be reckoned with, for it may lower the threshold so that ketogenesis may occur with a low F.A.:G. ratio in the blood. From the foregoing, then, we see that, in order to prescribe a diet for a diabetic patient without complications, we find his caloric requirements, allow  $\frac{2}{3}$  to 1 gram of P per kilo of body weight, and divide the remaining calories necessary between fats and carbohydrates in such proportion that the F.A. will not exceed 2.5 times the available glucose.

*A routine management of a case of diabetes.* If the patient is free from coma or other symptoms requiring immediate intervention, he is placed upon a basal maintenance diet, allowing one gram of protein per kilogram of body weight and a F.A.:G ratio of 2.5:1. He is kept on this diet for one week. Blood sugar determinations are made each

day and also the urinary sugar determinations, and the urine is tested for acetone.

If at the end of the week the patient is without symptoms and the urine is sugar free and the blood sugar close to normal, dietary treatment is all that is necessary, as a rule. On the other hand, if at the end of the week the urine contains a definite amount of sugar and the blood sugar is still above normal, the use of insulin is indicated.

The diet at this stage remains unchanged and insulin may be given one unit three times daily, twenty minutes before meals. The dosage of insulin is then increased one unit at each meal (that is three units per day), until the patient's urine is sugar free and his blood sugar within the normal limits.

*Use of insulin.* The majority of patients may be treated by diet alone. If the patient can not metabolize enough food to take care of his caloric needs, then enough insulin should be given to make up the deficiency.

Thus far the hypodermic route of administration has been the only successful one. However, attempts have been made to evolve some method by which insulin may be given by mouth. The difficulty has been that it is destroyed or inactivated both by the pepsin in the stomach and by the trypsin in the intestinal tract.

Recently, Murlin<sup>13</sup> and his coworkers have been using insulin tablets coated so as to withstand the action of the gastric juice, and containing a substance designed to delay temporarily the action of trypsin in the intestines to allow absorption. In this way the insulin has been absorbed and has caused an improvement in diabetic patients. The quantitative results, however, cannot be depended upon.

Insulin reduces blood sugar. The maximal effect usually occurs in four hours, after which the blood sugar rises. There are, however, variations in some individuals, the maximal effect occurring as late as eight hours after administration. The effect of insulin lasts about eight hours. In order to control the blood sugar effectively, two or three doses are usually given.

The size of the dose of insulin should be small at first, for some individuals are susceptible to hypoglycemic shock. The dosage is then increased until the urine is sugar free and the blood sugar is close to normal. As the patient improves, his glucose tolerance rises and the dosage of insulin needs to be adjusted.

The amount of carbohydrates accounted for by

one unit of insulin varies in different individuals and also in the same individual at different times. It also varies according to dosage. The larger the dose the less sugar is utilized per unit of insulin. Roughly, each unit of insulin takes care of two grams of glucose.

Juvenile diabetic patients need a much smaller dose of insulin than adults of equal severity. It is necessary to administer insulin to them with great care, for, on account of the lower blood volume, hypoglycemic reactions are more liable to occur.

Infection in a diabetic patient markedly reduces his sugar tolerance and predisposes him to acidosis. Large doses of insulin are necessary to keep these patients ketone and sugar free.

Operative cases are poor surgical risks. The shock of operation and the anesthetic lower the sugar tolerance. If the patient is given some insulin before an operation, buffered by some glucose, the danger of acidosis is diminished.

Insulin in cases of gangrene lessens the possibility of infection, although it has no effect on the gangrene itself, since this is due to a vascular disorder.

*Hypoglycemia.* The particular danger in the use of insulin is hypoglycemic shock. This, according to Banting, depends on the rapidity of the fall as well as the percentage of blood sugar. It usually occurs when the blood sugar is lowered below 70 milligrams per 100 c.c. of blood.

Every patient should be taught the warning symptoms of hypoglycemia. No patient should ever be allowed to be without an orange, a piece of candy, or some other rich form of carbohydrate while taking insulin.

The symptoms of hypoglycemia are a sense of impending danger, nervousness, extreme hunger, sweating and tremor (the shakes), subconsciousness, coma and death if untreated.

Treatment consists of giving the patient if conscious the juice of an orange or a tablespoonful of sugar. If the patient is already in coma, glucose solution intravenously may be given, or 1 c.c. of a 1:1000 adrenalin solution, followed by intravenous or rectal glucose solution.

#### DIABETIC COMA

Diabetic coma formerly spelled death, but with the advent of insulin the prognosis has changed. In the first place, it is preventable, if the diet has been properly supervised. Acidosis is a warning and is usually present some time before coma sets in. The degree of acidosis may be judged by the following laboratory findings:

1. By the reaction of the urine. If this is neutral or alkaline, it may be assumed that acid substances are not exhausting the alkali reserve.

2. By the presence of acetone. This is usually found for months or years before dangerous symptoms developed.

3. By the quantitative ammonia. Normally 0.5 gram of ammonia is excreted in the urine in twenty-four hours. Ammonia nitrogen constitutes about 5 per cent of the total nitrogen. This is called the ammonia coefficient. As a rule there is no danger from acidosis, if the ammonia excreted remains below 2 grams in twenty-four hours, and the ammonia coefficient is 20 per cent or less.

4. The degree of acidosis may also be judged by the  $\text{CO}_2$  tension of blood and alveolar air. Normal  $\text{CO}_2$  tension is 40 to 50 mm. of mercury. Between 40 and 30 signifies mild acidosis. When it falls below 30 it is severe, 20 or less means impending coma. Readings as low as 13 to 8 usually terminate fatally.

Symptoms of acidosis are fatigue, lassitude, irritability, nausea, vomiting and diarrhea as it becomes more marked. A characteristic form of dyspnea sets in later. The breathing is deep and slow and labored. Finally there is drowsiness, unconsciousness and death in less than forty-eight hours unless insulin is given.

Treatment of diabetic coma consists of: (1) Rest in bed, (2) keeping the patient warm with warm blankets and hot water bottles. The room should be well ventilated. (3) Cardiac stimulants, preferably digitalis. The heart is often extremely weak. There may be marked tachycardia. (4) Forced fluids. Patients in diabetic coma are much dehydrated. (5) The bowels should be moved by enemas.

In the treatment of coma insulin is given as follows: The initial dose should be 20 units intravenously and 20 units subcutaneously, followed by 10 to 20 units hypodermically every four hours. These small doses frequently repeated are more effective than single large doses. Maximum result of each dose usually occurs at the end of four hours. If the blood sugar is lowered too rapidly, insulin shock may occur, even though the level of the blood sugar is still high. When the urine becomes sugar free, the blood sugar reaches .20 per cent and the combining power of the blood for  $\text{CO}_2$  reaches 40 and the patient's condition is improved, the whole treatment may be changed to that of diabetes mellitus. This usually requires several days.

The blood sugar and CO<sub>2</sub> combining power of the blood should be determined every four to six hours. If the blood sugar is reduced to normal but the CO<sub>2</sub> combining power remains low which often happens, then 200 c.c. of a 10-20 per cent glucose solution should be given intravenously along with one unit of insulin for every 4 grams of glucose administered.

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OBSERVATIONS ON GLUCOSE METABOLISM\*

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The metabolism of glucose within the body during the past two years has occupied a very prominent place within the minds of the medical profession. Late in the year 1922 rumor was current that great advances were being made in the treat-

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ment of diabetes mellitus. Early in the year 1923 Banting and MacLeod gave insulin to the medical profession as an aid in the management of cases of diabetes. During this time many opportunities have been available to physicians to observe this disease. Our increased opportunities have broadened our knowledge of the action of glucose within the body, and we are learning that a sluggish glucose metabolism may have significance far more reaching than that associated with diabetes mellitus.

There are three external sources from which the blood stream may avail itself of glucose. These sources are carbohydrate, protein and fat. The carbohydrates are made up of sugars and starches. All of these substances, coming within the limits of our sugar tolerance, are converted by means of the digestive processes into simple glucose, and are absorbed into the blood stream as such. The destruction of protein is brought about in such a way that a combined carbon, hydrogen, and oxygen portion is split off, and this portion is converted into glucose. Fifty-eight per cent of the protein available may be metabolized in this manner. Of the fats, a portion amounting to approximately 10 per cent is converted into glycerine, and this is in turn converted into glucose (fig. 1).

An approach to the understanding of the manner in which the body is utilizing the glucose available to it may be had by first knowing the quantity of glucose ingested, and, second, the quantity of glucose excreted in the urine. If an individual is ingesting 100 grams of glucose and there is no glycosuria, we may assume that this individual is metabolizing properly the amount given. Many individuals showing a glycosuria will become sugar-free



Fig. 1. Illustrates the amount of glucose the body has to deal with when one ounce of various foods is ingested. (The rye muffins are prepared according to special receipt.) The calculations are made on the Woodruff basis from government bulletin No. 28, U. S. Dept. of Agriculture.

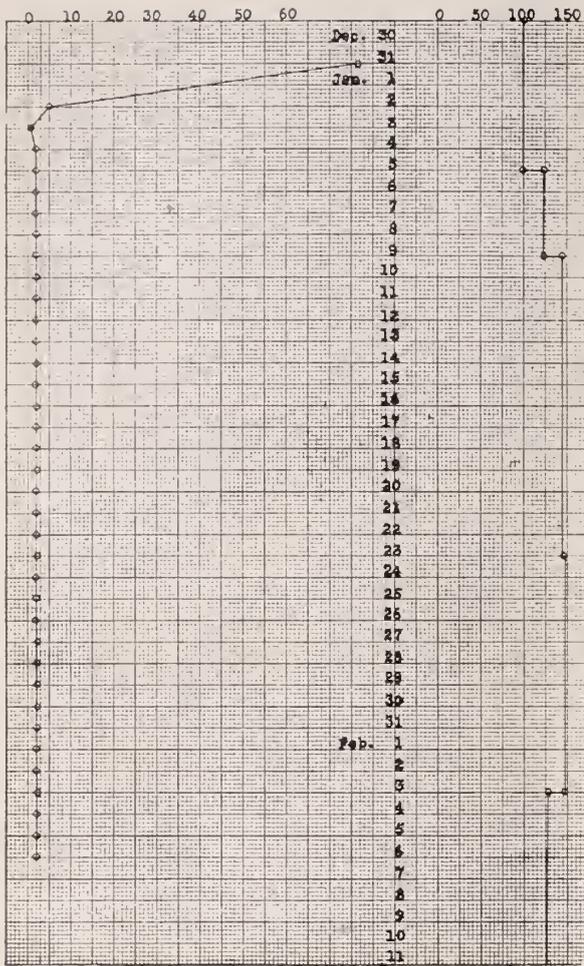


Fig. 2.

when their dietary is so arranged that the glucose intake does not exceed one hundred grams. Several graphic illustrations of this occurrence are submitted (fig. 2 and 3).

It is not safe, however, to draw all of one's conclusions in regard to glucose metabolism from the presence or absence of glycosuria. The urinary findings may be very misleading, both from the standpoint of the assumption of a disturbed glucose metabolism when a glycosuria is present, and in the assumption that there is no disturbance in the glucose metabolism when there is an absence of glycosuria.

Two years ago an individual presented himself for treatment for diabetes because of glycosuria. After repeated examinations of the urine and experimentation on the bearing which the food intake had on the glycosuria, the conclusion was drawn that the individual was not suffering from what we commonly term diabetes mellitus. This conclusion was reached because the blood sugar reading on

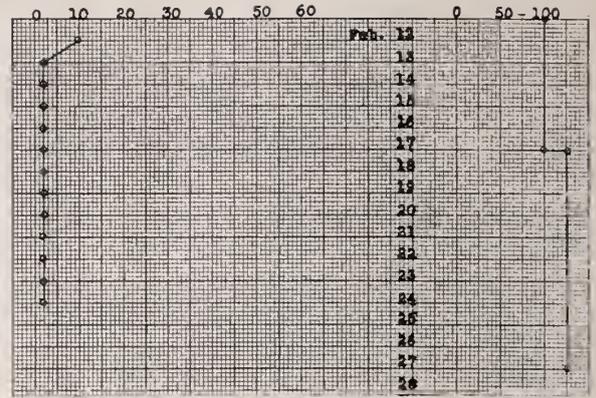


Fig. 3.

a fasting stomach was normal, and it could not be demonstrated that the carbohydrate intake had any influence on the glycosuria. Within the past month, just two years after the first examination, this patient was recalled for additional observation. From the blood studies a disturbance in glucose metabolism can readily be demonstrated, and the urinary examinations when confined to a three-hour period, following the ingestion of 100 grams of glucose, show quantities of sugar. In this instance the daily examination of twenty-four hour specimens of urine, accompanied by a single determination of the blood sugar, were very misleading (fig. 4).

Since the advent of Otto Folin, there has been available a new method of recording the progress of glucose metabolism. This consists of the examination of the blood for its sugar content. It is true that, prior to Folin, there existed the picric acid and other laborious and less satisfactory methods of estimating the glucose content of the blood. But the method which Folin devised made possible more frequent observations with less discomfort to the patient than had previously been possible. The method, in brief, consists of withdrawing a known quantity of blood by means of venous puncture. The blood is diluted with water and the proteins are precipitated with sodium tungstate and sulphuric acid. An alkaline copper solution with phenol produces a blue color. Comparisons of the densities of this blue color are made against solutions of known strength, and in this manner the sugar content is determined. Pollock and McElory have modified the original method of Folin so that determinations sufficiently accurate for clinical purpose may be made even more conveniently than with the unmodified Folin method.

If observations on the quantity of sugar within the blood are made before glucose is available, and

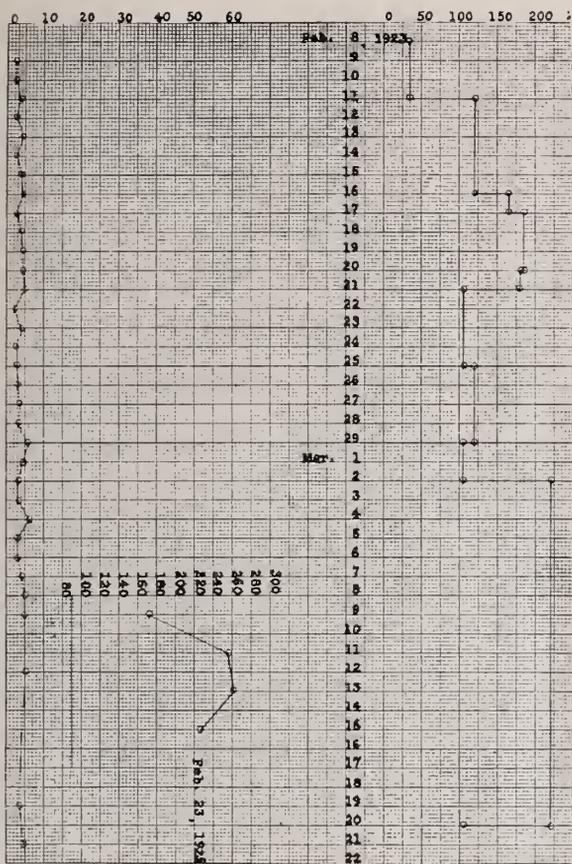


Fig. 4.

again after glucose is being transported, we are able to determine the length of time which should be required for a normal person to break down, transport, and store or burn a given amount of carbohydrate. If a normal individual has his blood examined in the morning before breakfast, after a twelve-hour fast, he should have between 90 and 120 milligrams of sugar in each 100 cubic centimeters of blood. The urine should be free from sugar at this time. If the individual is then given 100 grams of glucose, it will be found that at the end of one hour the blood sugar has advanced to approximately 160 to 170 milligrams per 100 cubic centimeters. The blood at this time is carrying the glucose to the liver and muscles to be converted into energy, or to be stored as glycogen. At the end of two hours most of the storing process has taken place, and the blood sugar concentration will be approximately 120 to 130 milligrams per 100 cubic centimeters. At the end of three hours the meal will all have been burned or stored, and the concentration of blood sugar will again be the same as it was before the meal was given, or between 90 and 120 milligrams per 100 cubic centimeters

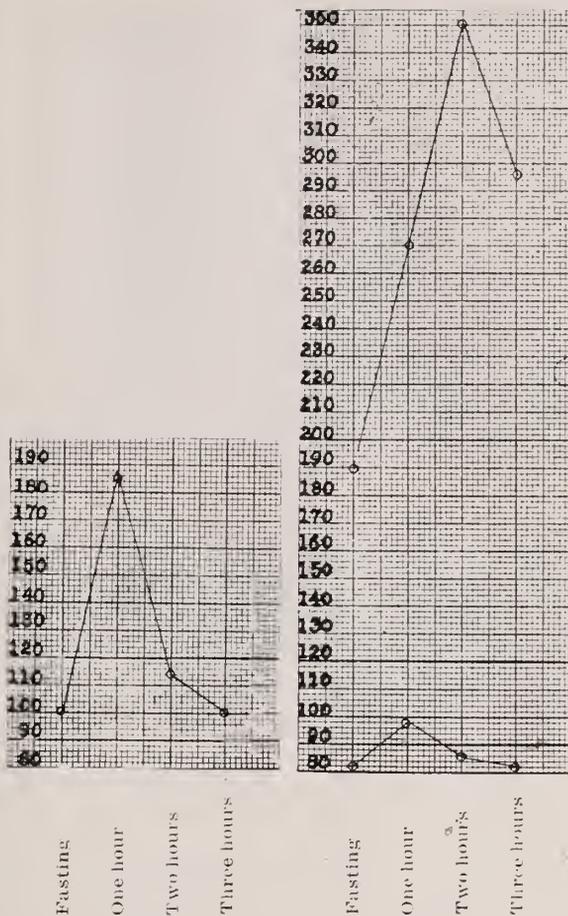


Fig. 5.

Fig. 6.

of blood. Represented graphically, these alterations in the concentration of blood sugar following a meal appear as in fig. 5.

The older writers spoke a great deal about "postprandial hyperglycemia," and it is now possible to incorporate the principles of this term in a graph. The period of postprandial hyperglycemia, as studied in the individual who has disturbance in the manner in which he metabolizes glucose, presents very interesting observations, and the comparison of this period in the normal and the pathologic individual gives an opportunity to measure in terms of time the difference between the two. If the test is carried out in a constant manner with all individuals, the only opportunity for variance is the manner in which different individuals will respond to this test. While the normal individual completes his observation in three hours' time, the abnormal individual may require from five to seven hours to complete his, or may complete it in one hour (fig. 6).

To correlate the revelations of blood chemistry with those of urine chemistry is a matter of great

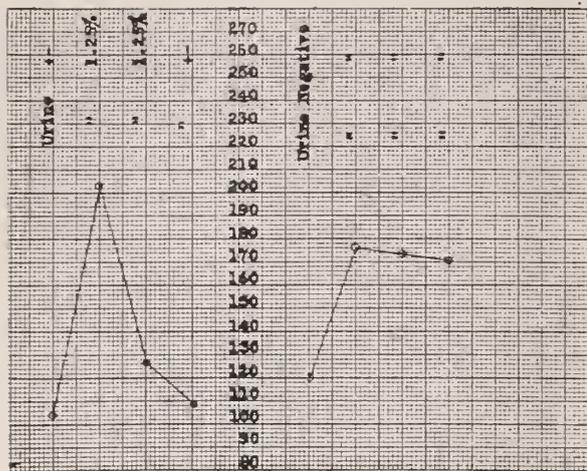


Fig. 7.

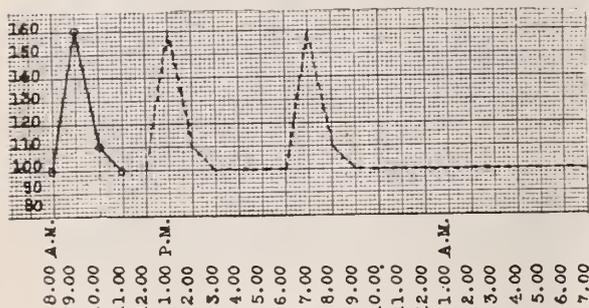


Fig. 8.

importance and considerable interest. One may make these observations at exactly the same time and yet find a great discrepancy. There may be sugar in the urine during the entire test, and yet the blood studies will reveal a normal metabolism of glucose. Also the exact opposite may be true. The urine may be normal during the entire test, and yet the blood studies will reveal a distinctly abnormal metabolism of glucose. The normal readings fall between these two extremes, and one finds a normal urine and a normal blood response during the entire test. Between the blood and urinary findings we have the excretory functions of the kidney to consider, and the threshold at which this kidney is capable of permitting sugar to pass through it governs the manner in which the blood and urinary findings correspond. One observation of each of these extremes is presented (fig. 7).

We must lay glycosuria aside, then, as an accurate index as to whether or not we are dealing with a faulty glucose metabolism. This does not mean that we can make all interpretations on the basis of a single blood sugar reading. The greatest of care should be exercised in the interpretation of such readings. The time at which the blood sugar is taken influences directly the reading obtained,

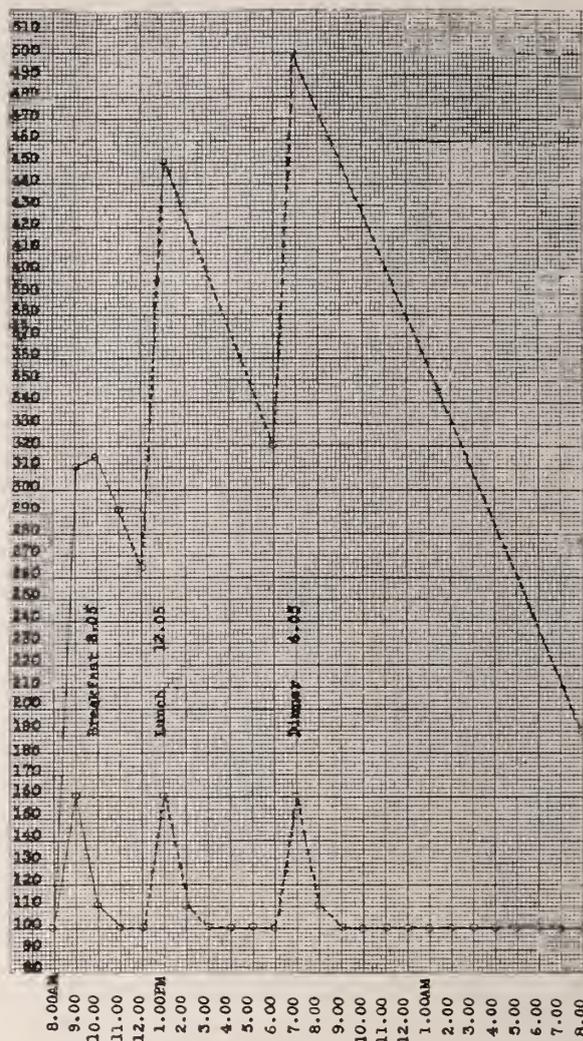


Fig. 9.

and one may obtain as many different readings in twenty-four hours as there are hours.

By using one's imagination, the fluctuations which the sugar content of the blood experiences in twenty-four hours' time may be readily pictured. After each meal there is a corresponding period of postprandial hyperglycemia, followed by a gradual reduction to the fasting level. If a normal individual were to have blood sugar readings taken at hourly intervals for twenty-four hours' time, his blood sugar graph should be expected to appear as in fig. 8.

The individual with a disturbed glucose metabolism who has a prolonged postprandial hyperglycemia is placed at a great disadvantage. It will require from five to eight hours for his blood sugar to reach the normal level, and if he starts with a normal blood sugar reading before breakfast, the probabilities are that he has a hyperglycemia all

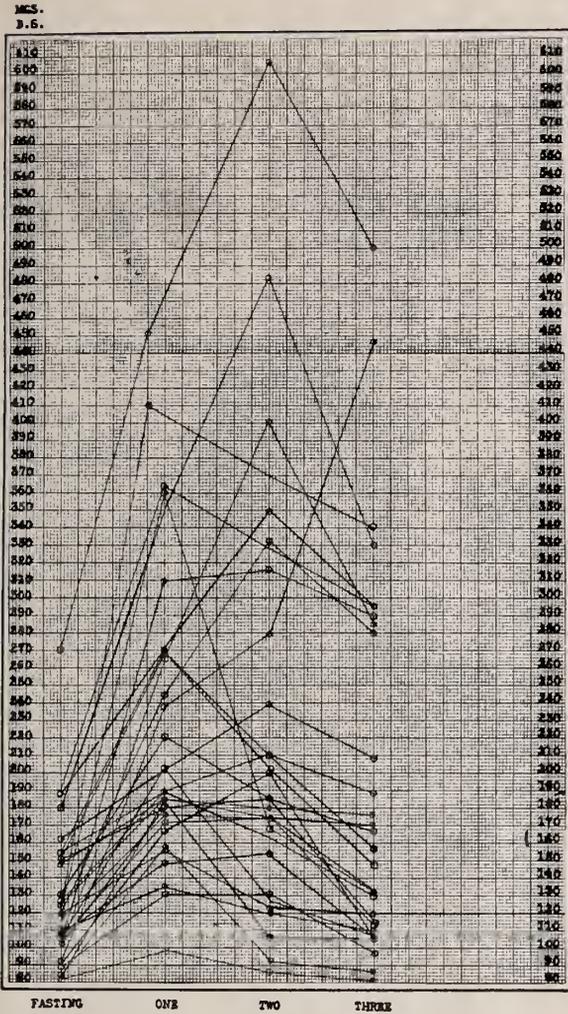


Fig. 10.

Normal fasting blood sugars 10 (41.25%). Normal 3 hr. 9 (26.66%). Subnormal fasting blood sugars 4 (17.5%). Subnormal 3 hr. 2 (8.33%). Above normal fasting blood sugars 10 (41.25%). Above normal 3 hr. 14 (65.00%). Highest 606, lowest 82.

during the day, because before he has had time to readjust himself following his breakfast, he has added his lunch, and before he has had time to readjust from his lunch he has added his dinner. The sugar content of his lunch and dinner are added to a hyperglycemia and contribute to make it more severe. A composite graph is presented to illustrate this. The first four readings on the normal and abnormal graph are actual readings, and those which follow are hypothetical readings (fig. 9).

The importance of taking all blood sugar readings in the morning before breakfast, after a twelve-hour fast, can readily be seen. As one studies a group of graphs determined on the above basis, it is apparent that there are two gross ways in which the glucose metabolism may be disturbed. There is one disturbance, the characteristic of which is that

the glucose metabolism is greatly increased, and oxidation takes place almost immediately upon entrance into the blood stream. There is another disturbance, in which the glucose metabolism is very slow and lethargic. It progresses with great difficulty over hours of time. In the latter type it seems that the liver and muscles are unable to take the glucose out of the blood stream. It remains within the blood stream for hours, so long that the second meal is added before the first is properly cared for, and the third meal is heaped upon the second only to cause an increased hyperglycemia. There follows a composite graph of thirty sugar tolerance tests in normal and abnormal subjects. This composite graph gives one a comparative conception and some idea of the varied readings which may be obtained, and how a single determination should be interpreted (fig. 10).

There is no particular difficulty in rendering an individual with sluggish glucose metabolism free from glycosuria and in obtaining a normal blood sugar reading, but there is no way known at the present time by which we can permanently change the individual with the sluggish glucose metabolism to an individual with a normal glucose metabolism. Insulin will do this at the meal which the dose of insulin accompanies, but so far as we now know insulin does not bring about a permanent change. Perhaps in a few years from now, when we are able to perform glucose tolerance tests on individuals whom we have treated with insulin and diet, we will see that their type of glucose tolerance has changed from the lethargic to the normal type.

There are certain factors which control the sugar concentration of the blood. The renal threshold is the point of concentration of blood sugar, at which the kidney is permeable to sugar. This varies greatly; it may be very high or very low. The two extremes which have been experienced by the writer are 80 milligrams as a minimum reading at which the kidney was permeable, and 270 milligrams as a high reading. When the kidney threshold is high, one finds a hyperglycemia without a glycosuria. When the threshold is low, one finds a glycosuria without a hyperglycemia.

The role of the liver in the control of the blood sugar level is important. Within the liver there is stored as glycogen quantities of glucose which the muscles cannot dispose of or store. This glycogen is later converted back into glucose and doled out into the blood stream in sufficient quantities to keep the blood sugar at a mean of about 100 milli-

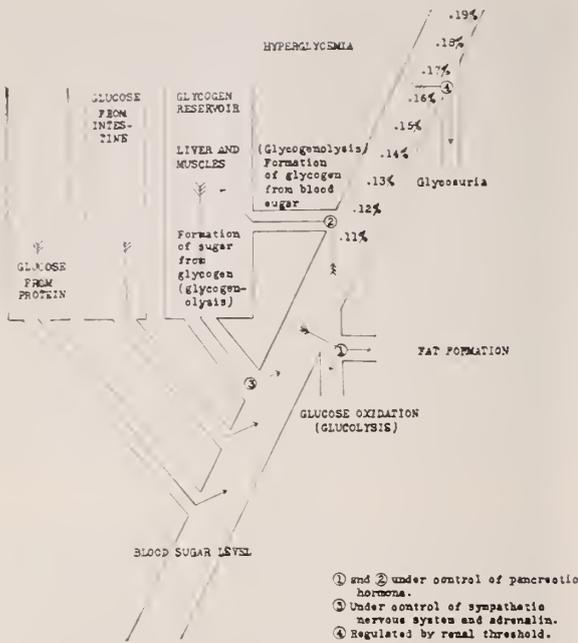


Fig. 11.

Schematic illustration of the factors which control the sugar concentration of the blood. (Ringer and Bowman, Appleton, 1923)

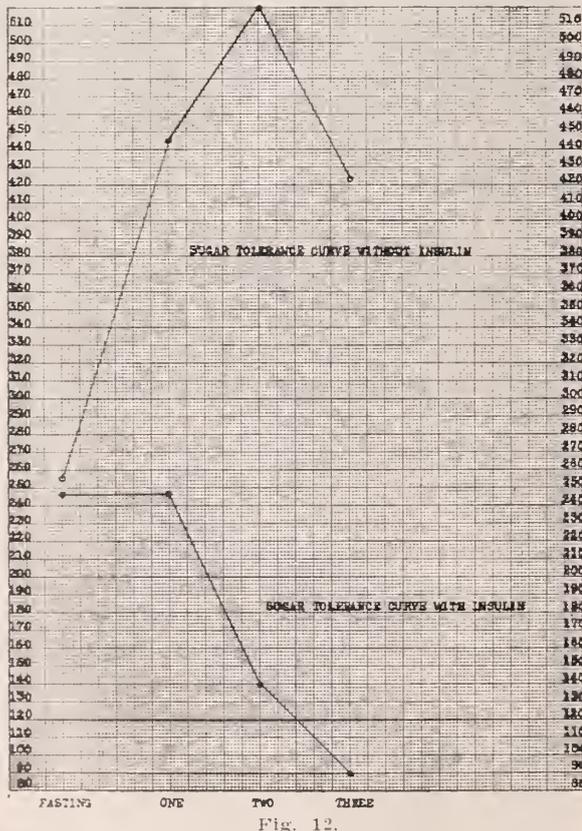


Fig. 12.

grams per 100 cubic centimeters. The doling out of this store of glycogen is under the control of the sympathetic nervous system and adrenalin. The formation of the glycogen from the blood sugar is under the control of the pancreatic hormone.

Another factor controlling the concentration of blood sugar is its oxidation within the muscles for energy, and the conversion of the blood sugar into fat. These two methods of disposal are controlled by the pancreatic hormone. Ringer and Bowman have arranged a graphic chart which illustrates very lucidly these factors (fig. 11).

Insulin is a great aid in the relief of the symptoms of the individual with sluggish glucose metabolism, for with it we can force the metabolic processes. Insulin has its limitations, one of the greatest of which is the individuals who use it poorly. Each unit of insulin will burn from one to two grams of glucose within the body, and it will do this faithfully. It will not make up for poorly calculated or arranged diets, or dietary indiscretions, nor will it reduce blood sugar when it is not balanced properly with the carbohydrate intake, nor will it, so far as we know now, change the sluggish glucose metabolism to a permanently active one. It will, when administered properly to the individual having a sluggish metabolism, change the prolonged period of postprandial hyperglycemia to a much shorter period, and thus enable this individual to maintain a normal blood sugar level for the normal number of hours during the day. When we have done this, we have from a metabolic standpoint rendered our greatest service to those individuals suffering from a faulty glucose metabolism. Perhaps, if we and the individual are faithful for a number of years' time, we may hope to basically alter the type of metabolism, and render the individual a more normal person (fig. 12).

**Scarlet Fever Toxin and the Dick Test.** The toxicogenic properties of nine strains of hemolytic streptococcus, obtained from the throats of scarlet fever patients in the first days of illness, were examined by P. S. Rosen and L. A. Korobicina, Moscow, Russia (Journal A. M. A., May 16, 1923). Seven of them were found to be toxin producers. In preparing the toxin, they have used the broth of fermented meat with 2 per cent Witte's peptone with an alkalinity of pH 7.8. Five per cent citrated or defibrinated sheep's blood was added to the broth. After incubation for four days at 37 C., the toxin was filtrated through filter paper, and 0.26 per cent phenol (carbolic acid) was added to it. The strength of the first portions of toxin was 1:250, and later 1:500. The toxin had the same effect as the toxin obtained from Dick, but it had a stronger nonspecific irritating effect, which must be put down to its defects. The results of Dick reaction on scarlet fever patients show a regular fall of the curve of positive reactions during the illness. In comparison with Dr. Zingher, the authors received a smaller number of positive Dick reactions for the first days of illness and a higher figure in convalescence. The results of Dick reactions on healthy persons in Moscow give a higher percentage, comparatively, with Zingher.

## A FEW WHY'S IN DIETETICS\*

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A Laplander who wishes to make a favorable impression on his lady love presents her with (not the skin in the shape of a sealskin coat as do our good men of today) the stomach of a seal. Why? The contents of the stomach contain the only green stuff she would get in a year. The Lapp girl knows nothing about vitamins but she does know there is health, well-being and vigor to be had in eating that stomach and its contents.

Twenty-five years ago, while doing postgraduate work in Vienna, I heard of the wonderful vitality, health and longevity of the peasants down in Bulgaria. I spent some time visiting that region. They were a poor people but happy, healthy, and contented. They knew nothing of vitamins, calcium, potassium, or iron salts or of balanced meals.

Experience and stern necessity had worked out the why of proper eating for them. Meat only on Sundays and feast days. Not the muscle part of the meat, such as steaks, roasts, etc. This was shipped out and sold to the rich. No, it was the stomach, liver, heart, kidneys, pancreas, all the glands, and the blood—the so-called waste material. Why was this better? Because this is the only part of an animal that contains the vitamins and good supply of salts necessary to health. Their daily diet was bread made from the whole grain, sour milk, cheese, an abundance of greens such as cabbage, beet leaves, chives, onions, chard, olive oil and wine.

You remember how a few years ago Metchnikoff went down there and discovered the Bulgarian bacillus in their sour milk, and thought he had the key to long life. He was only partly right. As you all know, the Bulgarian bacillus is a wonderful help in many stomach and intestinal disturbances, but only one factor in the health of those peasants.

Why was scurvy so prevalent among our sailors over so many centuries? How was it finally eradicated? The medical profession wasn't much of a science in those days. Very little, if any, study was made along the line of diet. But there were men outside the profession of keen observation occasionally. In 1535 Cartier, on his second voyage to New Foundland, was shown by the natives how to cure scurvy by making a strong tea of fresh pine

needles. Sailing vessels on trips to India found that the juice of oranges and limes would prevent and cure scurvy. A method of preserving lime juice in bottles was found, and by 1795 all vessels in the British Navy were compelled to carry lime juice.

About this time it was found that rickets could be cured or prevented by proper diet and cod liver oil. Then things went on for a hundred years. The Dutch in the East Indies and the Japanese were losing thousands from beri-beri, among their sailors and soldiers as well as the civil population. It became a serious problem. In 1897, Eijkman produced a polyneuritis in pigeons fed with polished rice, and also noticed that beri-beri was produced by a diet of polished rice, and that it could be prevented or cured by using the husks of the rice.

Rohman, in 1902, found that mice fed on purified food materials were difficult to raise and could not bring forth living young. McCollum, now at Johns Hopkins, for the past fifteen years has been working along these lines and absolutely proved how true this is.

Do you realize how much you are responsible as family doctors for the unborn babe of yesterday, today and the future? How much attention do you pay to prenatal diet for the prospective mother? Why are the rich and well-to-do of our U. S. becoming sterile and producing children inferior to foreign stock? Why does this wonderful wealthy country of ours rank away down about twentieth in the nations of the world for healthy babies? Did you ever stop to think what factor diet plays? Why has pellagra played such havoc in our southland the past forty years? It has meant the loss of millions of dollars in sickness and death.

In 1906 Hopkins called attention to the fact that there were "accessory factors" in the diet, in addition to the protein, fat, carbohydrates and salts, that played an important part in the nutrition, and an absence or deficiency produced diseased conditions. Funk, in 1912, suggested the term vitamins, and it has been generally adopted on account of its simplicity. This leads us up to the why of scurvy, beri-beri, pellagra, polyneuritis, rickets, poor teeth, etc.

## VITAMINS

The discovery of the vitamins and the consequent gradual unfolding of some of the mysteries of metabolism is likely to become one of the most interesting chapters in the history of modern medi-

\* Read before the Staff Meeting, St. Alphonsus Hospital, Boise, Ida., April 2, 1925.

cine. The first outstanding fact is that vitamins are essential to nutrition. The old doctrine which taught that all that was necessary from the standpoint of diet for the maintenance of health, normal growth and development of the body was the ingestion of proper amounts of carbohydrates, fats, proteins and mineral salts, is no longer tenable.

Vitamins must now be considered as necessary factors in rendering the nutrients available to the tissues. Animals which are fed so that their rations contain all the nutritive principles, but lacking in one or more of the vitamins, soon develop certain groups of symptoms and, if this deficiency in the diet is continued, the animals perish. If, however, the deficiency is overcome by the restoration of the missing vitamins to the food, the animals quickly recover. Sometimes this recovery is so rapid as to be startling.

Vitamins are named according to their solubilities. Thus the vitamin or vitamins which are soluble in certain fat solvents are called fat soluble A; those that are soluble in water are called water soluble B and water soluble C. Fat soluble A, antiphthalmic, is found abundantly in fresh milk, butter and eggs, but not in vegetable fats or oils. It is also found in green vegetables. The water soluble B, antineuritic, is found in the husk or outside of corn, rice, wheat, and other seeds. Water soluble C, antiscorbutic, is found in egg yolk, citrus fruits and roots as carrots. There is antirachitic or fat soluble D.

Certain diseases, widely dissimilar in their manifestation, which for centuries have baffled clinicians and pathologists, appear now in the light of our new knowledge to converge toward the vitamin deficiency theory as their common etiologic center. Rickets, pellagra, and dental caries are largely caused by a deficiency of the fat soluble group of vitamins. Deficiency in the water soluble group of vitamins is the direct cause of beri-beri or polyneuritis, also in scurvy. Many of the so-called minor disturbances of nutrition are doubtless due to a lack of vitamins.

We are told by Terman that about fourteen million of the twenty million school children in the U. S. are handicapped by some kind of physical defect, and that not far from two million are suffering from a grave form of malnutrition. Ten million are said to have enough defective teeth to seriously interfere with health, while as many more are infected with tuberculosis, and he estimates that two million will eventually die from this disease.

One million are stated to be predisposed to some form of nervous disease.

That the conditions are fully as bad as these figures indicate is borne out by the results of medical examination of young men for the draft in the World War. Over two million were rejected for physical defects largely due to wrong eating. Why this condition in our boasted favorable climate? For civilization, climate, comfort and plenty have had their opportunity and have not saved us from our unenviable physical and health standards.

McCullum, of Johns Hopkins, during the past ten years, and especially the past four years, has made wonderful progress in adding to our knowledge of dietetics. He states "that, as a result of my many experimental observations, I have come to hold the view that animal experimentation, human geography and history, all point in an all but conclusive manner to our diet as our principal cause of our health troubles."

He says that the rapid increase of the consumption of the cereal grains is a grave menace to health. There has been a great increase in the consumption of bleached flour, sterilized corn meal, polished rice and lifeless breakfast foods. This form of food is from 35 to 45 per cent of the total food supply in the U. S. McCullum, in his experiments on animals, proves conclusively that this kind of diet is responsible for the physical defects mentioned above.

Some of our authorities hold the view that much of the delinquency among children and criminal tendencies among adults is due to wrong eating. Prenatal life, infancy and early childhood are the critical periods. It is up to the doctors of today to direct and educate so that the babies of tomorrow will be borne from mothers who have been fed more scientifically.

This is the day of the kitchenette and delicatessen shop. The average woman is too busy with her clubs, card parties and movies to waste much time in preparing a proper meal. Go to restaurants, and what do you find? Meat and a vegetable, usually French fried or mashed potatoes. Before the potatoes are served, however, all the nutrient value has been removed. Mineral salts and the vitalizing substances known as vitamins are consigned to the garbage can; the remainder is merely a fuel.

The beautiful rolls of bread, good to look upon, but of no real food value from a health standpoint because of their bleached flour, deprived of all their mineral salts and vitamins, are partaken of freely. The meat ration is much too large. You have an

excess of nitrogenous compounds which tax the kidneys beyond their strength. Why do we have adrenal insufficiency and why do we have intestinal stasis? Is there not an underlying cause for both?

Why does a pigeon become paralyzed in the wings and legs when his food is demineralized? Why does the rat have obstipation and diarrhea when he is demineralized through the medium of his food? Why do the dog and ape die with intestinal manifestations when we demineralize their foods? In the laboratory these things are done abruptly for experimental purposes and the degree of manifestation is correspondingly extreme. Suppose the animals were demineralized gradually from the time they ceased to live on mother's milk, for a period of from forty to sixty years, would they be constipated, etc.? Would various tissue changes occur in the liver, kidneys, and stomach; and as a result, would localized areas of tissue degeneration take place which might first resemble endocrinism and constipation, then cancer, diabetes, pernicious anemia, etc.?

Why do the doctors neglect diet in so many of our common diseases? How about acne? Do any of you pay much attention to the diet? Do you know the authorities agree that one-third of these cases can be cured and the remainder markedly improved by proper diet?

Eczema is another common condition we encounter, caused in many cases entirely by faulty diet. Urticaria is absolutely caused by wrong food. Asthma is another distressing condition, caused in many instances by diet. What became of our diabetics in the old days previous to Allen and Joslyn's classic studies in diet and curing their cases by careful and rigid diet. Although we have a wonderful aid in insulin, we must fall back on proper eating.

What aid with drugs in nephritis if you neglect the diet? The majority of these cases can be kept in good condition only by proper eating. How many gastric ulcers can you cure with restricted diet?

Many of us are far too careless with our directions to patients on the question of diet. How many of you take the trouble and time to write out on your order sheet for the hospital patient's proper eating? How many of you patronize our diet kitchen for your patients?

Recently there has been much research work on proper diet for malignant cases. Eliminating very

largely acid producing foods and giving basic or alkaline foods, this diet works well in acidosis as well as all malignant cases. Following is a brief outline.

Neutral foods may be used in the amounts desired by the patient unless otherwise stated, as butter, cornstarch, cream, lard, sugar, tapioca.

In general, all vegetables, nuts, fruits and sweet milk, with the exception of prunes, plums and cranberries, are basic in their final reaction. These may be used in the amounts desired by the patient.

Almonds	Lemons
Apples†	Lettuce
Asparagus	Milk, cow's
Bananas	Muskmelon
Beans, dried	Oranges†
Beans, lima, dried	Peaches
Beets	Peas, dried
Cabbage	Potatoes†
Cauliflower	Radishes
Celery	Raisins
Chestnuts	Turnips
Currants	Carrots

† These foods have been found experimentally to be very efficient in reducing the acidity of the body.

#### A BASIC (ALKALINE) DIET

**Breakfast.** Baked apple with cream. Bacon. One-half slice toast. Butter, jelly. One glass orange. One glass milk.

**Luncheon.** Baked stuffed potato. Beets in cream. Combination vegetable salad. One-half slice bread. Butter. Olives. Iced cantaloupe. One glass orange juice. One glass milk.

**Dinner.** Cream of spinach soup. Escalloped potatoes. Buttered peas and carrots. California fruit salad. One-half slice bread. Butter. Apricot ice cream. One glass orange juice. Cocoa, nuts, raisins.

1. A fruit served with cream is used as a substitute for a breakfast cereal.
2. Three one-half slices of toast may be served at breakfast and bread omitted for luncheon and dinner.
3. Cornstarch is used as a thickener for cream sauces, soups, etc.
4. Lemon juice is substituted for vinegar in salad dressings.
5. Fat in the form of butter, cream, olive oil, etc., is used in sufficient quantities to regulate body weight.
6. The bulk of the diet is regulated to produce a normal bowel movement each day.

In conclusion, while this paper has been somewhat rambling, I hope there is something in it that will awaken a desire on your part to use less surgery in some cases and less medicine in others; more intelligent methods of feeding our sick, and missionary work to our well people.

Food faddists are springing up all over the country. Adroit advertising and pseudoscientists are not only taking thousands of dollars from the people, but what is more serious, endangering their health by fake foods. The medical profession is largely to blame for this.

## GASTRIC CARCINOMA\*

EMPHASIZING HYPERACIDITY WITH ULCER HISTORY  
A STUDY OF FIFTY-EIGHT CASES

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Gastric cancer can be only a diagnostic problem for the internist; and usually the problem is solved so late that his later duty is palliation. It has been recognized as a hopeless and inevitably fatal disease. Surgery has in recent years begun to offer the patient a ray of hope, for there are now numerous reports of three and five year cures, and isolated instances of cures up to fifteen years. These facts make the early diagnosis of the disease essentially important and yet how seldom do we see an early gastric carcinoma.

Recently we have reviewed the literature on this subject. It is remarkable how little has been added in the last few years from the diagnostic side, except by the radiologists. Recent enthusiasm for chemical tests of a specific nature has largely waned; at present they have little diagnostic importance.

Prominence has been given to the question of the relation of gastric ulcer to gastric cancer. Cole, of New York, made a very humorous talk at the meeting of the A. M. A. in Boston three years ago, and he apparently believed very emphatically that cancer was a disease developing of its own accord and that a gastric ulcer remained a gastric ulcer, or "ulcer is ulcer, and cancer is cancer." He said "opinions vary among the pathologists from A to Z. Aschoff says ulcers never become malignant and Zenker says they all do."

We had opportunity a few years ago to review with MacCarthy<sup>1</sup> two hundred resected specimens of gastric carcinoma and we observed several interesting facts. First, any chronic gastric ulcer with a crater more than 1 cm. across was usually carcinomatous, and if more than 2 cm. in diameter was nearly always carcinomatous. In several hundred other cases there were so few exceptions that these criteria are, if used with discretion, fairly safe guides to the surgeon. A second interesting fact was observed by plotting, as shown on our charts, all lymphatic glands on these specimens. The remarkable number of inflammatory glands are indicated by the light circles and the carcinomatous glands by the black (fig. 1). These are drawn

roughly to scale and you will note that many large glands were entirely inflammatory and many small ones were carcinomatous. In all more than 1400 lymph glands were studied microscopically and only half were carcinomatous.

Clinical review showed that those with few or no glandular metastases were the best surgical risks, and had the best prognosis. These slides also proved to our satisfaction that the surgeon may do the patient great injustice in not resecting as widely as possible, in spite of enlarged glands; for the inflammatory ulceration of gastric carcinoma, like cancer in the colon, may cause extensive inflammatory hypertrophy of the lymphatic glands before metastases take place. Further, marked inflammatory swelling in a gastric ulcer may be indistinguishable grossly from gastric carcinoma and this doubtless accounts for an occasional fifteen year cure.

From the pathologist's viewpoint gastric cancer appears to be preceded by gastric ulcer in a considerable portion of cases. In fact, I felt when we finished the above work about as Dr. Cole says that Zenker thinks. Clinical experience has since somewhat shaken my faith. We see patients with a suggestive ulcer history of years standing, who later develop carcinoma. Yet the larger number of my patients, in spite of very careful questioning regarding previous gastric symptoms, give a history of recent and insidious onset, so indefinite that they cannot give exact information, yet usually a matter of weeks or months. Their symptoms have come on without any history of previous chronic indigestion.

A recent review of nearly 2000 gastric complaints, carefully examined in our little clinic, has shown the upper abdominal organic lesions responsible for these complaints to be about in the following ratio: Gastric ulcer 1, gastric cancer 2, duodenal ulcer 6, gallbladder disease 12. That these ratios are approximately correct is evidenced in the discussion on my paper<sup>2</sup> in Chicago last June by Dr. Eusterman, who reports their ratio as the same, except for cancer. He explained this discrepancy by the number of hopeless cancer cases that go to the Mayo Clinic as a last resort.

Our group sees an average run of sick people, so it seems likely that more than 3 per cent of gastric complaints, serious enough to require careful gastrointestinal study, have gastric cancer. Gastric cancer occurs in three patients of each thousand coming into our general practice, and practically none of

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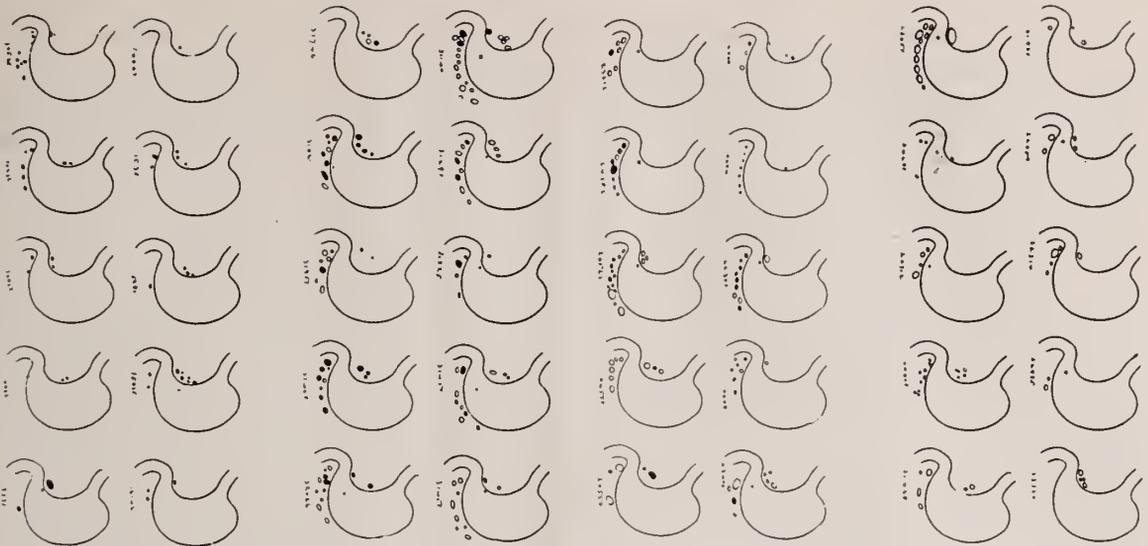


Fig. 1. A diagnostic study of forty resected specimens of cancers of stomach, showing microscopic glandular involvement. Glands roughly drawn to scale, white

circles inflammatory glands, black circles carcinomatous glands. (From MacCarthy and Blackford, *Ann. Surg.*)

these come in for diagnosis early enough to enable us to give relatively permanent relief.

A recent article by Dunham<sup>3</sup> tells us interestingly of certain geographic and racial immunities. He states that one-third of all cancers occur in the stomach.

Our present answer to this problem cannot be along the line of cure until we learn the cause and cure of cancer. We do believe that early radical surgical excision will cure localized cancer in the stomach as it will elsewhere. How, then, to see the patient and recognize his disease early enough to cure him?

A review of our 58 case histories of gastric cancer has not solved the problem, of course, but it has brought out again well known facts about the disease. Cancer has apparently originated in more than 80 per cent of our patients in a resectable part of the stomach. Early pyloric obstruction has been a fortunate complication because it has brought the patient in early for relief. Almost all patients giving short histories have marked evidence of disease before coming in for relief. Only one-third of all cases give any suggestion that can be stretched into a story suggesting preceding gastric ulcer. Men are more frequently affected than women, and in a ratio roughly 4 to 1. These statements are but repetition of well known facts, and yet we seem to forget them when the middle aged patient with a slight indefinite indigestion of one or two week's duration comes in to see us.

The text-book symptoms of cancer do not concern us here. The early symptoms are so slight that they may not be recognized by the patient as

symptoms at all. He is just a little off in eating—food doesn't taste good, he doesn't get hungry, thinks he needs a vacation because he's tired, has a little gassy indigestion, a little abdominal discomfort, etc., usually symptoms in a patient previously free from "stomach trouble." Such patients should never be given some simple remedy and turned loose without physical and x-ray examination, and blood counts. Ten years ago, only, the diagnosis in such a patient was largely a guess. Unless an epigastric mass were palpable, we had to depend on that unreliable criterion of absent HCl, and awaiting developments.

In our 58 patients with organic cancer a presumptive diagnosis was made by the roentgenologist and the clinician on 57 patients. The radiologist cannot differentiate between gastric lues and gastric carcinoma, nor can he differentiate with uniformity simple ulcer from ulcer with malignant degeneration. Occasionally he cannot say more than "pyloric obstruction." These findings the clinician must try to interpret by other means, both physical and chemical. The radiologist may rarely fail to recognize the presence of a gastric lesion, but the expert will recognize, we believe 98 per cent of carcinomatous stomachs as having at least organic gastric pathology, and his working diagnosis will be correct in the vast majority of all cases.

We must call attention to the fact that this exact radiologic diagnosis is very highly technical, requires large experience, has many pitfalls to the occasional operator, and requires both fluoroscopic examination and plates. Seven patients within a few months have consulted us in despair on account

of an erroneous x-ray diagnosis elsewhere of cancer. More careful study showed the diagnosis erroneous in all of these, and operation proved it in five cases. Reexamination of the doubtful case, particularly after an antispasmodic to rule out extrinsic spasm, has occasionally saved us great embarrassment. "To err is human," but there is no excuse for the x-ray diagnosis of cancer in a normal stomach; and such was our own error noted above, occurring in 1918.

CANCER OF STOMACH				
Age	Number Patients	No Suggestion Ulcer History	Possible Ulcer History	Probable Ulcer History
Under 36.....	2	....	....	2
36-45.....	4	4	....	....
46-55.....	12	9	....	3
56-65.....	20	10	7	3
66-75.....	7	5	1	1
Total.....	45	28	8	9

Females 9 Males 36	Free HCl o in 19 analyses	Free HCl x in 2 of 5 analyses	Free HCl x in 6 of 7 analyses
4 Patients	previously operated on		
18 Patients	palpable tumor		
19 Patients	explored by operation		
37 Patients	lost 1016 pounds		

Out of total of 1850 G. I. patients examined:

31 Patients	gastric ulcer
58 Patients	cancer stomach
168 Patients	duodenal ulcer
369 Patients	gallbladder disease

A careful tabulation has been made of the case records of our 58 patients. Inadequate and incomplete records have been discarded and we have left 45 patients for study. Certain facts have seemed to stand out and are worthy of review.

*Age.* Two patients were under 35 years old, four between 36 and 45 inclusive, twelve between 46 and 55 years inclusive, seven were 66 and over. Nearly one half were between 56 and 65 years inclusive.

*Weight loss.* Thirty-seven patients on whom exact figures were noted had lost a total of more than 1000 pounds, averaging  $27\frac{1}{2}$  pounds apiece. Seven patients, however, had lost 15 pounds or less, and six patients had lost 15-20 pounds. Two-thirds of all did not feel that examination was necessary until the weight loss exceeded twenty pounds.

*Palpable tumor* was noted by the examiner in one-half of all patients at the first examination.

*Syphilis* was evidenced by three strongly positive Wassermanns, the percentage to be expected<sup>4</sup> in running routine Wassermanns in a private clinic.

*Previous operations* inside the abdomen had been done on only four patients. In our entire series of patients with gastric symptoms 22 per cent have had laparotomies before we see them, yet in this

cancer group less than 9 per cent had been explored previously.

*Operations* have been undertaken on less than half of all patients, yet we have felt that the patient should be explored, if there seemed any chance of either palliation or cure. In half of all coming for examination the disease was already too far advanced to consider surgery.

Now we must refer to the clinical aspects of the ulcer-cancer controversy. Reports in the literature are at great variance, as Cole has so concisely expressed, and yet the truth must lie between the extremes. Gastric cancer has usually an insidious onset, as we have noted; yet not all patients have been previously free from gastric distress. We have carefully reviewed our 45 case histories and arbitrarily divided them on the history evidence alone into three groups: (1) Probable preceding ulcer history; (2) possible preceding ulcer history; and (3) no suggestion preceding of ulcer history. A study has been made of all gastric analyses recorded regarding the presence of free HCl.

1. *Probable gastric ulcer history* has been present in nine patients; seven gastric analyses have shown free HCl present in all but one case. The average duration of gastric symptoms has been sixteen years for the nine. In one case only two years of typical ulcer history existed, in two for five years, in six for fourteen or more years. The time of change in symptoms to those of cancer averaged eleven months previous to examination.

Typical of this group as we have interpreted it, I wish to present one case history:

Case No. 16951, Mr. A. M., age 31 years. History of severe epigastric pain when the stomach is empty for the past five years. This pain has come on in spells, lasting two to five weeks and has been promptly relieved by food and soda. He was advised to leave Alaska one year ago for operation and came to Seattle with this idea. The physician there advised medical treatment for ulcer, which he took in a Seattle hospital for four weeks with great relief. He returned to Alaska apparently in good health, but the symptoms soon returned and much more severe, and with vomiting. After a weight loss of 40 pounds he was operated on in Alaska. The Alaska surgeon found "a neoplasm the size of a large man's fist on the upper third of the lesser curvature." Since there was no obstruction the abdomen was closed and the man sent to us for further advice.

Our findings corroborated fully the above, with marked hyperacidity shown by gastric analysis. The Wassermann was negative.

We advised the patient to return to his old home in Norway.

2. *Possible gastric ulcer history* has been noted in eight patients. Five recorded gastric analyses

have shown free HCl present in three instances. The average total duration of indefinite symptoms suggesting ulcer is twelve years and the onset of cancer symptoms averages eleven months before coming for examination.

As typical of this group I present one case history:

Case No. 11733, Mr. A. W., age 56. History of stomach trouble off and on past fifteen years but not sufficient to incapacitate him. Symptoms chiefly pain in upper right quadrant and pit, and chronic gas and sour stomach.

Six months ago began vomiting at times. Unable to eat meat and gradually unable to eat more and more kinds of food. At times vomits what he has eaten the day before. No pain at any time. (The patient is a christian scientist.) Never vomited blood or saw blood in the stools. Great loss of weight, and past two weeks bedridden.

Examination revealed an epigastric mass and the patient had high gastric acidity. The x-ray report is of a large filling defect, involving the lower half of the stomach with marked obstruction.

3. *No previous suggestions of ulcer history* is found in two-thirds of all our cases. Nineteen gastric analyses in this group fail to show free HCl in a single instance. The onset of symptoms has been so insidious that a definite date of onset cannot be established, yet it is not remote. The average duration of symptoms for 28 patients is eight months for any gastric complaint, and one-fourth had a total history of less than four months. This group includes all those cases that we consider with the typical onset of cancer.

This study shows that one-third of our gastric cancer patients have had a preceding possible or probable ulcer history, and three-fourths of these ulcer-cancer patients have free HCl present, even in excess of normal. The two-thirds without history suggestive of preceding ulcer presented no case with free HCl. This observation is interesting in connection with the recent work of Hartman,<sup>5</sup> who showed that patients with free HCl and gastric cancer were vastly better surgical risks, both immediately and as regards ultimate prognosis.

As previously reported,<sup>2</sup> we have ascertained that in this total series of stomach complaints we have found the following numbers of cases of upper abdominal organic pathology:

31 Chronic gastric ulcer	168 Duodenal ulcer
58 Gastric cancer	369 Gallbladder disease

We recognize that there are undoubtedly errors in certain of these diagnoses. Yet they have been made with as great accuracy as our use of the best diagnostic methods can make them and they are at least relatively correct. The ratio of 31 cases of chronic gastric ulcer to 58 cases of gastric

cancer makes it evident that ulcer does not always or usually precede cancer. Yet the ratio of 31 cases of gastric ulcer to 9 (or 17) cases of gastric cancer having an ulcer history makes a more logical showing for a causal relation. In other words, we still believe that chronic gastric ulcer is exclusively a surgical disease after diagnosis has been definitely established.

In conclusion, the internist's present duties as regards cancer are both educational and diagnostic. The laity must be taught not to regard lightly chronic dyspepsia in middle life, and particularly that the onset of digestive disturbances in a previously healthy man past forty years old deserves careful and detailed study. Regarding breast cancer the public is fairly well informed; in lip cancer likewise a large number come promptly for examination. Only a minute fraction of all gastric cancer patients come in for diagnosis early enough to give relatively permanent relief. The physician himself is occasionally slow in recognizing early symptoms as suggestive of gastric cancer. We have seen several patients who had been under symptomatic treatment for a considerable period after the diagnosis should have been readily made.

Finally, it is only when the disease is recognized early, before there are serious symptoms, that we can offer any prospect of radical relief to the patient.

#### CONCLUSIONS

1. Of forty-five patients with gastric cancer, seventeen (38 per cent) presented histories suggestive of preceding ulcer.
2. Free HCl has been absent in all of nineteen patients without previous history suggestive of gastric ulcer.
3. Free HCl has been present in nine of twelve patients (75 per cent) with history suggestive of preceding gastric ulcer.
4. The public, and some of our profession, need enlightenment on the importance of prompt and accurate diagnosis of dyspepsia in middle life.

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## STRICTURE OF THE RECTUM AS AN INDIRECT CAUSE OF PELLAGRA

REPORT OF A CASE

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Pellagra associated with gastrointestinal lesions has been reported in the past by Rolph,<sup>1</sup> Bryan<sup>2</sup> and recently by Bender.<sup>3</sup> The cases described by these authors developed on a balanced ration as a result of faulty assimilation. In the case we wish to report the lesion did not interfere with assimilation but did, because of its nature, cause the patient to voluntarily choose an inadequate diet which eventually brought on pellagra. The history is unique and for this reason we wish to place it on record.

**History**—Mrs. P., age 54, wife of a farmer, has lived for the past twenty-four years in Oregon. Until ten years ago her history was essentially negative. At that time she developed a serious type of hemorrhoids. These were very painful and frequently bled a great deal. Nevertheless, nothing was done about them until three years later, i. e., seven years ago, when she underwent two operations. A perineorrhaphy, suspension and appendectomy were done at the first operation, and some surgical procedure to correct the rectal condition at the second. Following the latter operation, a stricture developed and her hemorrhoids remained uncured.

The rectal stricture has necessitated daily use of the enema for the past seven years, the poor woman being unable to have a normal bowel movement. Constant use of the enema tube has kept her hemorrhoids inflamed and painful. To keep the contents of the bowel soft and thus prevent irritation she eliminated from her diet all foods which she thought might cause a hard, lumpy stool. After a long period of experimentation she finally adopted the following diet as the one which best suited her needs: For breakfast she had toast, mush and black coffee; at lunch and dinner nothing but bread, butter and tea. She ate no other food with the exception of an occasional egg. Rarely she substituted a glass of milk for the tea. The patient has adhered strictly to this diet for the past five years.

Last fall (1924) she began to fail rapidly. She lost strength and became greatly depressed mentally. All her faculties seemed dulled and her character changed completely. In place of the sympathetic, good natured, hard working farmer's wife, she became morose, depressed and apathetic. When disturbed she was very cross and irritable, and she became bedfast. Shortly after the onset of the mental symptoms her family noticed a peculiar skin disorder, resembling sunburn upon the dorsum of her hands, her elbows, and the posterior aspect of the neck. This eruption was accepted as sunburn by the patient and all with whom she had contact, although it persisted for many weeks.

About three months ago an obstinate diarrhea developed. A physician was consulted for the first time since the development of the stricture, but he was unable to check the running off of the bowels or visibly improve her condition.

On March 22, 1925, the family brought the patient to the Portland Medical Hospital Clinic for treatment of the rectal stricture, believing this to be the cause of all her trouble.

**Examination** (March 22, 1925)—The patient was poorly nourished and very evidently mentally unbalanced. She had several large hemorrhoids and a rectal stricture, the result of a former operation. Nothing else of consequence was noted. There was no glossitis or dermatitis.

**Further History**—The rectal pathology was corrected and the patient discharged from the hospital April 6, 1925. At home her mental condition soon became very much worse so she was readmitted to the hospital April 30.

**Examination** (April 30)—Reexamination revealed a marked bilateral and symmetrical dermatitis involving both hands. The skin was puffy and thick. In places it was dark, almost black, and some desquamation had occurred. The dorsum was covered with these deeply pigmented areas, while the palms were dry, scaly and pink in color. The mental condition was greatly aggravated, amounting to a frank dementia, though when undisturbed a semistuporous attitude, resembling the so-called typhoid state, was assumed. The patient was emaciated. Frequent involuntary bowel movements were passed in many of which blood was observed. There was no glossitis.

**Diagnosis**—We made a tentative diagnosis of pellagra and our opinion was confirmed by a dermatologist, Dr. Ettleson. At this time more careful inquiry revealed the dietary peculiarities related above. The deficiency in diet was not brought out by our history at the first admittance of the patient, the development of the dermatitis being responsible for our more detailed investigation. For the following reasons we feel our diagnosis warranted: (1) The history for years of a deficient diet. (2) The presence of the diagnostic symptom complex, namely, dermatitis, diarrhea and dementia.

### DISCUSSION

Pellagra is extremely rare in the Pacific Northwest and almost unheard of among persons who have lived here for any considerable period of time. Though of unknown etiology, this condition is now quite widely accepted as a deficiency disease. Certainly this case would tend to substantiate that view. A point of interest to us in the above history was the rapid progress of the disease following the surgical operation for the rectal stricture. This fact has been observed many times<sup>4</sup> but its explanation is as yet not clear.

Stevens Bldg.

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## CARDIOLYSIS FOR ADHERENT PERICARDIUM\*

### CASE REPORT

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Brauer,<sup>1</sup> in 1902, suggested cardiolysis as a surgical therapeutic measure for relief of adherent pericardium. In this condition the visceral and parietal pericardial layers are united together by adhesions, thus anchoring, as it were, the heart to the bony wall of the thorax. The heart as a pulsating organ is thus at a mechanical disadvantage and the added burden forced upon it leads to myocardial degeneration and the sequellae of cardiac insufficiency and incompetency. To remedy this condition, Brauer suggested the removal of the bony inflexible structures over the cardiac area, thus leaving an elastic wall whose movements would be synchronous with cardiac pulsations. This operative suggestion was carried out by Peterson and Simon in 1902. The operation has been known as cardiolysis by Brauer, pericardiac thoracotomy, by Kocher, boning of the chest wall, by Summers. Brauer reports three cases, all of whom did very well.

Morrison,<sup>2</sup> in 1908 and 1909, advised a similar operation in a case of extreme cardiac hypertrophy in aortic disease with angina pectoris. The enlarged heart, confined by the incompressible chest wall, became limited in its power to work, and the anginal pains were caused by pressure. He reports operating on such a case and on another, where the heart's potential space was encroached upon by an irremediable mediastinal tumor. He called the operative procedure, designed to furnish more room for the heart's action, a thoracostomy. Dunn and Summers,<sup>3</sup> a few years later, refer to this procedure more fittingly as a cardiac decompression.

Thorburn,<sup>4</sup> in 1910, reports one case. He reviews the literature and cites fifteen cases in all, which had been undertaken mainly by European surgeons; the results were good and the mortality very low.

Summers<sup>5, 6</sup> and Dunn and Summers<sup>3</sup> were the first to use this procedure in America (1913 and 1917). They report three cases. They were rather surprised to find that the procedure had found so little favor in this country as the operation was well founded, was readily carried out, the results were very good, and the mortality very low. They

stress the preoperative indications postulated by Brauer,<sup>1</sup> the presence of diastolic shock,<sup>2</sup> the systolic retraction at the apex, and the ability of the heart to compensate.<sup>3</sup> Their review shows the operative results were very good; the failures were few and due usually to poor selection of cases occurring in patients, whose hearts, owing to myofibrosis, myocardial degeneration or valvular disease, were unable to recover from the damage already done. In early cases, those in whom the threatened cardiac insufficiency was not too marked, the liver not too large and the ascites not too great, much relief and permanent good could be expected.

Smith,<sup>7</sup> in 1920, reports two very interesting cases of cardiolysis for chronic mediastinopericarditis, two cases which have been studied in much detail from the clinical and diagnostic points of view. He furnishes a comprehensive survey of this definite clinical entity and includes a review of the literature to date.

More recently, Bourne,<sup>8</sup> in 1924, contributes two cases. From the literature he compiles twenty-five cases in whom the operation had been successfully performed; of these seventeen were markedly improved, a percentage of 70.

More recently still, Marvin and Harvey,<sup>9</sup> in 1924, have added another excellent case report. In perusing the literature, they have added to Bourne's compilation several cases which evidently had been overlooked by him, so that in all there are about thirty-six authentic cases of cardiolysis for adherent pericardium; of these, six were reported from this country. They remark upon the paucity of reported cases from America and suggest that clinical reports be made so that the value of the operative procedure can be verified in a clinical way. It is with this latter purpose in mind that this individual case report is offered.

**History**—Patient (A. W. D.) is a moderately well nourished man, 38 years of age, who entered Seattle City Hospital complaining of (1) bloating of abdomen, (2) swelling of the extremities, (3) persistent cough and shortness of breath. These symptoms have been present for about seven days; there is a history of a similar illness ten weeks ago. Patient is a married man, a mattress maker by trade. His general health has been good. There is a history of typhoid fever and typhoid malaria eighteen and three years ago respectively. Following the former and continuing to date, there has been a rather marked constipation with intervals of "bloating of the stomach," usually relieved by epsom salts. There is also a history of "flu" two years ago, but with no special complications. There is no history of any other gastrointestinal, cardiorespiratory, genitourinary, bone, joint or neuromuscular disease.

About seven days ago he had one of his usual attacks of "bloating of the stomach"; this was

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followed shortly by swelling of the left leg; he became short of breath and respirations became markedly embarrassed. About four days after onset of symptoms he began to have an irritable cough which has been practically continuous to date; with this there has been an abundant expectoration of mucus. He had a similar but much milder period of illness some ten weeks ago, which under rest and medical treatment disappeared in a few days.

**Examination**—A fairly well nourished adult male, 38 years of age, who lies propped up in bed at an angle of 45 degrees; is markedly cyanotic, is coughing continuously, with respiration much embarrassed. Examination of the head and oral cavity show nothing particularly abnormal; all extra ocular movements are free and equal and eyes react well to light and accommodation; teeth, though having many fillings, look clean; the mucous membrane of the mouth and pharynx is moderately hyperemic. All the superficial vessels of the neck are dilated and pulsating and are more prominent on inspiration; there is slight enlargement of the cervical glands.

Respiratory excursions are short and quick and are more of the abdominal than costal type; the excursions of the lower costal margins are markedly limited and this is more noticeable on the left. Tactile fremitus is more marked on the left than on the right; both lungs are slightly dull to percussion in the lower portions; the right is more resonant than the left. Breath sounds are bronchovesicular in type and some fine moist rales are heard over both lower lobes.

No point of maximal cardiac impulse is visible; it is palpable about 11 cm. to the left of the sternal line in the fifth interspace; this point does not change on turning the body to right or to the left. The area of chest anteriorly, which is included between the mid-sternal and nipple lines and between the fifth and seventh ribs inclusive, is seen to retract with each systolic impulse of the heart; the retraction of the interspaces in this area is especially marked. The epigastric angle is seen to retract synchronously with retraction of the chest wall and the systole of the heart.

By percussion, the area of cardiac dullness extends from 11½ cm. to left of the mid-sternal line in the fifth interspace to 2½ cm. to the right of the mid-sternal line in the fourth interspace. Two tones are heard at each valve area but they arrive with great irregularity. A loud friction rub is heard over the lower half of the cardiac area; this rub is synchronous with cardiac systole. The second sound at apex is accentuated, approximating a shock sound; there is also roughening of the second heart sound. Pulse rate has been quite irregular and ranging from 60 to 90. Blood pressure, 95-70.

Abdomen is considerably distended; there is definite bulging in the flanks and a fluid wave can be demonstrated on bimanual palpation. Lower edge of the liver is readily felt three finger breadths below the costal margins and is slightly tender. Spleen is not palpable. Abdominal examination is essentially negative for any other masses or inflammatory reaction.

The extremities show edema of the superficial tissues around the malleoli, pitting on pressure more marked on the left. There is a fairly well marked varicosity of the veins in both legs but much larger and more tortuous on the left. Reflexes, both superficial and deep, are readily obtained and appear normal.

Blood Wassermann is negative; coagulation time three minutes. Urine contains a trace of albumin, but no casts on repeated examinations.

Fluoroscopic x-ray examination shows heart enlargement both to the right and to the left. It does

not move on turning the patient to either side. A definite diaphragmatic tug is visible on deep inspiration. Roentgenograms confirm the evidence of cardiac hypertrophy. A marked thickening of the pericardium is visible for about 2½ cm. along the left border from the third to the fourth interspace.

From the above findings a diagnosis of pericarditis with adhesions was made and operation advised.

**Operation**—Operation performed October 21, 1921, twenty days after admission to hospital. Anesthesia was furnished by local and block infiltration with one-half per cent novocaine; whole line of incision was first infiltrated and then each intercostal nerve blocked off lateral to the area of bone to be resected. Right angled "U" shaped incision was made with base over the sternum, the arms extending laterally and wide enough to include the third, fourth and fifth ribs and long enough to allow rib removal, extending from the mid-clavicular line to the sternum, about 11 cm. in length. A skin, muscle and fascia flap was then dissected off the thorax and reflected outward, toward the axilla. Subperiosteal resection of these ribs was accomplished without discomfort to the patient. Periosteum was then dissected off the parietal pleura and pericardium. The cardiac area of the chest wall, now freed of its bony structures, retracted and bulged forward in a characteristic manner with each heart beat. Closure of the wound in layers with fine cat-gut and skin closure with clips. Wound dressed with dry gauze dressing. Patient left the operating room in good condition.

**Postoperative**—Immediately following the operation the patient experienced considerable relief; respiration was less frequent and deeper, cyanosis disappeared and the cough which had been so persistent was markedly improved, even though the moist rales of the pulmonary edema persisted for two days following cardiolysis, when they completely disappeared. From this time on he gradually improved in strength. For the next three weeks he was kept in bed, so that the damaged myocardium, through rest and a minimum of effort, might have every opportunity to regain competency. Six weeks after the operation he was discharged from the hospital in good condition, and within three months was walking two and one-half to three miles in an afternoon, without any shortness of breath or any other symptoms of myocardial insufficiency. This improvement has to date been a permanent one. Three years after the cardiolysis operation finds him well and strong, undergoing usual activities in a normal manner.

Undoubtedly many cases of adherent pericardium are overlooked in the routine examination of the heart showing signs of decompensation. One reason for this may be the assurance felt by the attending physician, that in the evidence before him of a failing heart and the accompanying valvular insufficiencies, he has sufficient to explain his patient's symptoms. The physical signs of adherent pericardium may be slight and easily overlooked, especially if the adhesions are in certain anatomic areas. A brief review of the pathologic anatomy and physical signs of this condition is offered in order that through familiarity it may enter more often into our differential diagnosis.

According to most authorities, adhesions between visceral and parietal pericardium seldom, if ever,

through mechanical causes hinder the heart's action to the degree that incompetency will be the result. It is with adhesions between parietal pericardium and contiguous structures that we are concerned. This may occur in four ways: (1) Anteriorly, to the ribs, costal cartilages and sternum; (2) pleural, gluing the pericardium to the pleura and fixing the edges of the lungs; (3) mediastinal; (4) diaphragmatic. When the adhesions involve the left side of the heart alone symptoms referable to respiration would be the result, namely, asthmatic breathing, dyspnea and pulmonary congestion or edema. When the right side of the heart is involved, we have symptoms resulting from stasis involving the great veins, producing engorgement of the liver, ascites and finally edema of the extremities.

This latter condition, first described by Pick as pseudocirrhosis, can easily be mistaken for a true cirrhosis. Ellsworth Smith reports a case that had been tapped twenty times and finally submitted to a modified Talma operation for relief of ascites thought due to portal cirrhosis. Later a diagnosis of adherent pericardium was made and cardiolysis gave complete relief.

The principal physical signs of adhesive pericarditis are: (1) Systolic retraction at the apex, together with retraction of the epigastric angle, ribs or costal cartilages of the precordium; (2) pulsus paradoxicus and filling of the cervical veins on inspiration, both Kussmaul's observations; (3) systolic retraction of the tenth or eleventh interspaces in the back, Broadbent's sign; (4) diastolic shock; (5) immobility of the heart.

The clinical results of cardiolysis for adherent pericardium in the case herein reported has proven a very brilliant one. Such a favorable outcome was no doubt due to the fact that it was a very early case, with recent signs of incipient cardiac incompetency; when the mechanical embarrassing structures were removed, the heart promptly recovered through its efficient cardiac reserve.

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## THE INDICATIONS AND TECHNIC FOR REMOVAL OF EXCESSIVE SUBCUTANEOUS ABDOMINAL FAT

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The profession is not sufficiently acquainted with the benefits, cosmetic and physical, that can be secured by the operative removal of large masses of subcutaneous abdominal fat. Fatty pendulous abdominal walls have been looked upon as natural, as irremediable and therefore have received but very little study. It has, however, been repeatedly and amply demonstrated that superfluous masses of subcutaneous abdominal fat can, with safety and with advantage to the patient, be removed by operation.

The essential anatomic characteristics of the morbid entity herein discussed is the pathologic accumulation of fat in the subcutaneous cellular tissue of the abdominal wall. In all these cases the abdomen shows a symmetric, at times an enormous, increase in volume. The fat excess is present mainly in the lower, anterior and lateral infraumbilical portions of the abdominal wall. This superfluous local fat deposit is usually, though not always, a part of general obesity. It may or may not coexist with other, related or nonrelated, pathologic changes in the abdominal cavity, contents or walls.

It is a condition incident to adult life. Excessive localization of fat in the abdominal wall is infrequent in men, but is not of uncommon occurrence in the female. Flabby and sagging abdominal walls overloaded with fat are met more commonly in individuals who since early life have been corpulent. The most pronounced forms, however, are seen in multiparae. It also occurs in nulliparae.

Redundant fatty abdominal walls, if uncomplicated, give few symptoms. These symptoms, however, both subjective and objective, are characteristic, are conclusive. All the objective symptoms are demonstrable either to inspection or by palpation. At first pain and disability are slight. The condition progressing, they and the other associated symptoms increase in severity.

Pain is influenced by posture and is more marked with the patient in the erect posture. The pain is increased by all forms of exercise. It is lessened and in some cases disappears with rest in the recumbent posture. It often has the nature of a painful, dragging sensation, and is lumbar, inguinal

and hypogastric in location. These patients are inactive; they become averse to all effort; there results a vicious circle, for the increased inactivity leads to increase of the local and general adiposity. In women who near the menopause take on adipose, there not uncommonly forms a huge, pendulous roll of fat across the lower abdomen, below the umbilicus. This pendant fat-mass creates a crease, often madid and eczematous, located just above the symphysis pubis. In most patients the continuous contact and friction of the inferior cutaneous surface of this fat apron and the underlying regions determine an erythema, an eczema, an excoriation, an elephantiasis of the skin of lower abdomen, of the inguinal folds and in some cases of the upper part of thighs. Some patients present two distinct creases. All the subcutaneous tissues of the hypogastric and iliac regions take part in the formation of these folds which extend transversely from one lumboiliac region to the other and which vary in length and thickness. In the recumbent posture the flabby fatty mass gravitates to either side and sags over the iliac spines and crests. The prolapsed tissues show impaired tonicity, impaired resistance.

This excessive fat-deposit hangs apron-like over the external genitalia and the upper portion of the thighs and may overlap the upper two-thirds of the thighs. Other subjective symptoms and objective signs are enumerated in conjunction with the indications for operation.

Pendulous fatty abdomen must be differentiated from diastasis of the recti abdominalis, with which it is at times associated. When it is suspected that the recti abdominalis muscles are abnormally separated, it is better that the examination be conducted with the patient in the recumbent posture. The patient reclining is told to elevate the head as high up as possible without the help of the arms. If the diagnosis be positive, this maneuver separates the inner borders of the two recti muscles from one another, causes a greater or lesser prolapse of the intestine through the gap and enables the examining hand to easily depress the superficial abdominal coverings into the abdominal cavity.

The careful clinician will not overlook or misdiagnose hernias (umbilical, inguinal, ventral, etc.). They frequently coexist with pendulous abdomen. Their anatomic location and clinical characteristics are suggestive. Hernias give an impulse on coughing, often do not present the same volume; if intestinal, they give a tympanitic note on percussion. If no hernia be present, if there be no abnormal

separation of the abdominal recti muscles, the fat mass can be raised easily from, and made to glide somewhat upon the underlying resistant muscular wall.

In properly selected cases large masses of fat can be removed from flabby, sagging, fatty abdominal walls when the excessive fat deposit

1. Causes great annoyance and discomfort;
  - a. Pain.
  - b. Backache.
  - c. Dyspnea on moderate exertion, ascending stairs, walking, bending.
  - d. Distressing irritation, inflammation of the skin, erythema, intertrigo, eczema, chronic inguinal excoriation.
  - e. Pouch-like overhanging of a cumbersome, useless, fatty apron in front of the upper portion of the thighs.
  - f. Undue fatigue and painful dragging sensation from the weight of the mass.
2. Determines manifest disability;
  - a. Interference with locomotion.
  - b. Interference with marital relations.
  - c. Interference with the exercise of one's calling.
3. Constitutes a physical handicap;
  - a. Inability to comfortably, gracefully assume the erect posture, waddling gait.
  - b. Inability to attend to the toilet of the lower part of the body.
4. Becomes an unbearable social handicap;
  - a. Patient is unwieldy, unsightly, incapacitated for recreation, not sick, not well.

Resection of large masses of subcutaneous abdominal fat is also justifiable and most serviceable:

1. In the obese, to lessen the tendency to hernia formation.
2. In operating for hernia in obese individuals, so as to obtain better exposure of hernial rings and hernial regions.
3. As an associated, supplementary and terminal step to many abdominal operations: Hysterectomy, ovariectomy, cholecystostomy and cholecystectomy, appendectomy, uterine prolapse and retroflexio uteri.
4. As a preliminary step to many abdominal operations so as to facilitate intraabdominal work: A small fibroid in an atrophic uterus, a retrocecal appendix, a small gallbladder tucked away in a deep

fossa with a stone in the cystic duct or, still worse, a stone in the common duct, etc.

5. In cases in which the careful fitting and wearing of an orthopedic apparatus is not otherwise feasible.

The benefits secured from massive resection of superfluous subcutaneous abdominal fat are so evident, so manifest, and the dangers attending the operation are so negligible that even in the absence of any other pathologic process calling for an abdominal operation, the surgeon should not hesitate to advise and to urge the excision of these useless, troublesome and cumbersome fat accumulations.

The risks of simple lipectomy, either performed alone or in conjunction with other operative procedures are far outweighed by its beneficent results. It has been successfully performed at the same sitting with operations for the cure of hernia (umbilical, inguinal, ventral, epigastric, incisional), appendiceal, gallbladder and uterine disease, etc.

In simple lipectomy the operative procedure is limited to the massive retrenchment of redundant subcutaneous abdominal fat and overlying skin. The incisions extend through the skin and fat, down to the fascia and not beyond.

Lipectomy may also precede or follow, but always at the same operative sitting, surgical steps for the cure of hernia (umbilical, epigastric, ventral, incisional, etc.), for the cure of uterine displacements and uterine diseases (fibroid, prolapse), for the cure of appendiceal and gallbladder disease and also for diastasis of the recti abdominalis muscles. Lipectomy has also been performed to facilitate intraabdominal work by making intraabdominal organs more accessible and also to assure a better adjustment of orthopedic appliances.

Different operative procedures are employed for the cure of the condition under consideration, each operator being partial to the method which has given him the most satisfactory results. Whatever technic be used, and it must always be adapted to the case at hand, it is all important that the integrity of the abdominal muscles, fasciae and peritoneal fat be fully respected. Only the skin and fatty mass immediately subjacent to it and directly in front of the fascia are to be removed.

The operation which we perform and recommend is entirely different from that performed by Creveling and others who, to restore the abdomen to normal size and contour, carry their incisions through the entire thickness of the abdominal wall

into the peritoneal cavity. Bear in mind that we are not considering here prolapsus of all the abdominal coverings. We are only discussing the removal of excessive subcutaneous fat accumulations.

The completeness of the fat-removal is a measure of the freedom from fat thereafter of the part operated on. Enough fat should be removed to completely eliminate soreness from chafing. It has been our practice to remove the mass in one or two pieces.

After having performed several lipectomies, the surgeon experiences little difficulty in deciding how much fat it is judicious to remove. The removal of one large wedge-shaped fat-block, occasionally two, rarely three, usually suffices. As the patient lies in the recumbent position, the fatty mass gravitates to the sides and can be picked up, can be lifted up as a great ridge or fold lying across the abdomen. The operator grasping this mass in the center, pulls it up and away from the body and circumscribes it by two incisions, one passing a little above and the other a little below the lines of deflection.

It is preferable that the incisions be clean-cut, made with one or several long sweeps of a broad-blade scalpel or short amputation knife. The length of the incisions has little appreciable influence on the outcome of the operation. Patterning by slicing is bad practice. Small hacking cuts are to be condemned. The smoother the fat surface, the better the approximation. Two initial incisions usually fulfill all requirements. These two incisions converge into one upon the fascial layer. Thus no undermined surfaces, no pouches for the accumulation of wound secretions are left. Sufficient skin must be left for approximation. Let there be no undermining of the wound edges.

In selecting incisions, we are guided as to length, type and location by various factors, such as the existence or absence of complicating conditions, the nature of the other indicated operative steps, the amount of fat to be removed, the patient's general condition, etc. For the excision of large wedge-shaped fat-blocks, we have adopted and recommend two transverse elliptical incisions, beginning well over on one side and extending to corresponding points on the opposite side. These two incisions converge toward the fascial layer. Many other operators follow the same practice. If an abdominal section is to be performed at the same sitting, the fat is first removed by means of a double trans-

verse incision. This having been done, one proceeds to enter the abdominal cavity by a vertical incision through the rest of the abdominal wall.

Transverse incisions have the disadvantage of increasing the already large waist measure and of leaving at each end of the wound an unsightly projection. To avoid these, I remove a small vertical ellipse of skin near each end of the transverse incisions. If transverse incisions be used, the approximation and the apposition of the flaps is effected more easily, the liability to postoperative separation of the wound-edges is minimal, primary union is frequent, delayed healing is rare and long-delayed cicatrization is very uncommon.

Longitudinal incisions find favor with few clinicians. Though multiple incisions, patterning by slicing, hacking cuts, undermining of wound-edges, excision of vertical fat-blocks are not conducive to the most esthetic and satisfactory results, they have been practiced by some.

Fat is a tissue of low vitality and special care must be taken that there be little or no accumulation of serous or serosanguinous fluid between or beneath the flaps. Retained wound secretions retard healing, invite infection. A drain is inserted at either end of the wound. If the wound be long, a drain may also be inserted at its center. Closure is effected by approximation sutures of silkworm-gut. For the exact apposition of the wound-edges we use linen. In these cases I frequently advise the application of hot boric acid compresses to the operative wound for from two to three days; these fomentations are to be renewed every four hours. The drains are removed as soon as the discharge warrants it and the patient is kept in bed for about fifteen days. The result of the closure should be a smooth abdomen with a linear scar and without any hanging folds. Some patients during the first few postoperative days complain of abdominal tightness, of abdominal constriction. It calls for no special treatment.

#### SUMMARY

In suitably selected cases, the operative removal from the abdominal wall of large wedge-shaped masses of subcutaneous fat has the following advantages:

1. It is a safe and invariably beneficial surgical procedure. It has always been performed under general surgical anesthesia, never under local or spinal anesthesia.
2. It is always devoid of immediate or remote dangers to the patient. Though the wound be extensive, the hemorrhage is moderate and healing is good.
3. It is simple of execution and, if unassociated with another operative procedure, the technic is easy and the performance of the operation does not consume much time. It is all important that the incisions be carried to but not beyond the fascia.
4. It may be the only operation indicated and performed in the case at hand.
5. It is at times called for as a preliminary operative step to facilitate intraabdominal work and to give better access to intraabdominal organs.
6. It is not infrequently employed in conjunction with other operations. The operator retrenches an unwieldy, useless, pendent mass of subcutaneous abdominal fat and at the same sitting brings relief to, or corrects coexisting pathologic abdominal conditions.
7. It eliminates a physical handicap, effects a marked improvement in the patient's appearance and general well-being and procures complete relief from the unsightly, painful and disabling deformity.
8. It gives permanent results, if postoperative instructions regarding diet and exercise are followed.
9. It secures the following benefits:
  - a. Diminution in weight.
  - b. Freedom from discomfort, local and general, and from the disability incident to cumbersome, burdensome, pendulous fatty abdomen.
  - c. Improvement in the patient's general appearance, the hippopotomal abdominal wall being converted into a straight front. Improvement in poise. Body is no longer awkwardly balanced and gait ceases to be waddling. Patient is enabled to resume his or her occupation.
  - d. Patient after its performance can occupy a more normal, more natural and more useful relation to society.
  - e. The patient can be more active, can give his body more personal attention, can give his or her work the necessary attention and necessary application.

## GENERAL ASPECTS OF PUBLIC CHARITY AND PROBLEMS INVOLVING THE MEDICAL PROFESSION

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You may wonder why a discussion of a subject of this character should be selected to present to an assemblage of medical men, why it should displace the customary consideration of medical and surgical subjects, or why a physician should present it rather than a trained social worker. All of these questions I am going to attempt to make plain to you, and give what I believe to be excellent reasons.

In the first place, the best proof of an institution is the quality of its product. I am taking the pauper as the product in the field of public charity, counting his number, seeing if his ratio is increasing or diminishing, finding out why he is a pauper, and why he remains a pauper.

Second, the reason for selecting this, rather than a scientific subject, is that I believe a medical man should occasionally view the whole man, and not confine himself so closely to the ill period of his patient's life. And, again, the physician should be interested, because he has been largely guilty of bringing about much of the pauperizing himself, unintentionally of course, as I will show later on.

And, third, why not have this discussed by a real expert, a trained and experienced social worker? Here, I must confess, is the hardest question to answer, without appearing arrogant, and without hurting the feelings of those engaged in social welfare work.

I have thought of this whole subject of charity for many years and, as you might surmise, my discussion is to be quite critical of the results that are being secured in this field. Why the public should receive poor results from social workers is baffling at first, and it is not easy to analyze. All over this land, and particularly in the larger cities, you will discover the same type of social work being done. It is true that in isolated places you run across highly constructive welfare work, and, again, good work as being done in a very restricted sense; but the great bulk of it is the strictly emotional kind, in which common sense plays no part. To be sure, great skill will be shown in organization, such as in boards, executives, etc., and marvelous

schemes to prevent duplication, which seem to have absorbed all the energy and brains of the workers, and left little to ask for, except the very vital matter as to the ultimate disposition of the dependent himself.

Then you have all seen the spectacle of the community chest drives, high powered executives imported for the occasion; great publicity and appeal, excitement running high, parades, luncheons, balls, etc., all to raise funds for the poor. After all this tension, the funds are procured, the workers slacken, and a new potential crop of paupers is created. With this public clamor for funds, these sobbing people on behalf of the poor, this planning and organizing out in the light of day, with great promise and hope for the poor, you have the pauper confirmed in his hope of succor, and the prepauper expectant and hopeful, sagging down to the pauper level, and a new crop of individuals coming on to take his place from above.

Now, I ask you, haven't we, as ordinary laymen, a right to expect that trained social workers should know better than to deliberately aid in advertising the poor, dressing up the pauper, publicly holding up decent self-respecting citizens in a wholesale way, and as a public spectacle? If they were really intent upon curing the dependent of his deplorable condition, shouldn't you rather expect that the welfare workers would feel, and say something like this: If I am to cure this man's condition, I must do it quietly, so as not to hurt feelings, and I must not take away his last remaining safeguards, self-pride and respect. I must not publish what I am about, because that would drive away the self-respecting dependent—the only kind we want to help—and leave only the other kind to fatten at public expense. He would also think, as dependence is an undesirable state, why advertise it and make it appear common, when as a matter of fact, it would not be near so common, if we stopped catering to it, and catered to the self-supporting more.

Have you ever heard of trained social workers in any great number protesting like that? I have not, but I have read long articles in great national magazines, glorifying the wonderful success of drives for the poor, but stopping short with the money returns; not a word as to how this money was to be invested, nor what values were to be gained by its use. These drives are nation-wide, popular only on the surface, and yet no social workers, in any great number, have been known to protest. On the surface these drives are vicious, and not a pro-

\* Read before King County Medical Society, Seattle, Wash., May 4, 1925.

test has come. So, therefore, it would seem needful that someone in every locality should attack this wanton waste of people and money, and this, I hope, answers the third question.

Should the welfare worker alone be blamed for this failure to do his duty well? It would be answered "yes" and "no." If an organization is created, trained, and paid to carry out a distinct function, ordinarily the failure is entirely its own; but in this instance several factors, by way of mitigation, should be noted. First, historically the prince and pauper type of charity seems to have existed from very early history, and much for the same reasons as today. Second, the teachers of the theory and practice in this field must have greatly neglected to single out and emphasize to the student the one great fundamental, and that is about as follows: First, prevent him from being a pauper; second, cure him if he is one, by putting back into him the desire and the pride which will forever after keep him self-supporting. On the other hand, indigent relief must have been greatly stressed in contrast to prevention and cure and thus to save the citizen. Therefore, when these workers face their tasks in their every day practical application, they are met by a horde of clamoring people, not only indigents, but the indigents' neighbors, of all degrees, demanding aid for the poor or supposedly poor. The worker finds himself, single handed, with all the pressure on the indigents' side. Nothing organized on the other, but his own little handful of workers, and they not able to stave the hordes demanding relief. Right at this point is where he needs the greatest clarity as to his duty—which is to save these to decent citizenship—not merely to alleviate material need among them.

Here, too, should be mentioned two big factors why the worker is handicapped. First, we are and have been drifting more and more to paternal, or a sort of socialistic trend in government; this is a very stealthy, detempering influence born in the atmosphere of paternalism. This is so important as to warrant a separate discussion that cannot be given here. Second, we must not forget that the worker holds what amounts to a political job, and this fact tends to further restrict any little play of initiative he might have.

There are some other defenses that could be made for the failure of the welfare worker. One more will be mentioned, and that is the drifting habit in our thinking about public affairs; but, on the

other hand, this is the particular problem of these trained workers, to foster the right conception of their duties through vigorous publicity. Let them begin to boast of how few, rather than how many, dependents they are compelled to treat, and soon the public would be with them in mind and money for the movement's support.

I must regretfully make a statement here, but it is my belief that the strongest factor standing against all this thoughtless pandering to the dependent is an individual with normal, self-respecting qualities. How, then, is this latter type to supplant the other? First of all, an effort must be put forth through educational channels to stop this very artificial effort of creating paupers by wholesale. I would venture to assert that if all our so-called welfare agencies, as now conducted, were abolished tomorrow and for good, in a generation we would have largely regained our old self-reliance, thrift, self-respect, and those other qualities found in strong individualists. Then the individuals would be compelled to put those qualities into himself to survive, the home would again become the fountain-head of inspiration, and common sense would again be substituted for emotionalism in this field.

It is not my purpose to advocate the abolition of the welfare forces we now have; there need be no loss of personnel or organizations, but there should be a radical change in the conception of duty by the average welfare and charity agency, and this should deal with the cause, the prevention and cure of the dependent, with the right publicity in wholesale quantities and on all occasions to promote the idea of better citizens, rather than to act merely as an agent of relief. It is with regret that I make this assertion that in many instances these very agencies, to which we entrust this work, do not stop at giving relief to all who apply and pass whatever barriers may obtain, but actively solicit those who may at the moment have little or no means of support to apply for alms, and many are thus sent through the pauper mill, the majority to remain, if not actually then a mental pauper at least. Many avenues of cure and prevention of the dependent are open to our minds, if we hold simple and rational views on the subject. Many welfare workers are mental paupers themselves, which makes it vastly more difficult to improve agencies administered by them.

In this brief paper my purpose is to direct your minds to the problem of saving the dependent as

a future respectable citizen, rather than, as is now the vogue in most places, to give him relief and then largely forget his future. Any agency working for public good which forgets this as the ultimate aim is failing in its chief purpose.

One of the great and growing factors today in producing undesirable citizens is our present form of emotional charity work, whether promoted by the individual or by groups. Shameful publicity is daily given, that lacks truth, exaggerates conditions of need, fosters hope in the breast of the habitual dependent, and drags down many to the state of the pauper who otherwise would take care of himself. All over this country today is to be found an increasing band of professional promoters willing and anxious to stage community chest drives, using methods almost amounting to blackmail in some instances, and all under the guise of charity. These people are well paid, of course, usually out of funds thus collected, but the money cost is not being discussed here, only in an incidental way. The great cost is reckoned in the loss and the ever-increasing loss of good citizens. No community, no state, nor nation can afford for long to cheapen its citizens in this manner.

*Problems involving the medical profession.* As a profession we stand above, as being equipped by education and experience to undertake a diagnosis of the economic and mental ills of the subjects whose health we safeguard. We are peculiarly equipped to undertake the study of the causes of dependence and to cure it, because we need merely to transfer our equipment from the preventing and cure of disease to the preventing and cure of pauperism.

This is peculiarly our problem for another reason, namely, we have been, as a profession, largely responsible for breaking down these fine traits of humanity, by offering to all who apply free advice and treatment at our clinics and dispensaries. Some exceptions, of course, may occur, notably when a patient gives something in return for these services, as the submission of himself as clinical material in teaching institutions, but even these clinics are conducted with little thought of the ultimate disposition of these people as citizens.

It would seem clear that enough has been said to indicate the general principles underlying this discussion. I now wish to refer to another phase of this subject, as it concerns the physician. That is the economic consequences to the doctor himself, in a collective and individual sense.

In the first place, I can best illustrate the effect of free treatment by supposing that a certain merchant advertised he would give away free, to all those who could not show visible means of support, one pair of silk hose or any other desirable commodity. Don't you suppose that merchant would be imposed upon, and that every other merchant in like occupation would lose a lot of legitimate trade? Many good citizens, who now pass as good citizens, would hie themselves for a pair of hose, and the result would be just what it is in all our free clinics today. There is still another phase to this, and that is to lower in the public mind the value of any commodity that can be had so cheaply, just as the free clinic has tended to cheapen professional services in the public mind. And yet other results occur from these practices. One is the natural resentment many feel toward paying good money for services others get for nothing.

I would especially emphasize that it is very far from my mind to advocate withholding our services from the worthy poor but, on the other hand, it should be plain that we have no right to break down the safeguards of good citizenship, even to restore that citizen to health, because, first of all, it can be done without these dangers, and also because a self-respecting, ill or even crippled citizen is more desirable than a well pauper. Furthermore, if you consider the time percentage of illnesses of the average life, and compare it with the time percentage of good health, you will find it very small by comparison (I have not been able to get the figure), but it can not well be over 1 per cent. Therefore, this 99 per cent time should not be jeopardized by methods used during one per cent of a life time, especially as it is unnecessary.

As before mentioned, the profession should always give freely, as it always has, of its best thought and effort to the poor. It is my opinion that our profession is the best equipped to correct the welfare and charity work all over this country; that, if you are among those who fear the day of socialized or so-called state medicine, you should be able to see how we are laying the foundation for it by our own acts. It seems to me that any rational individual could readily see that socialism, communism and allied systems are incompatible with progress, because great progress implies great individuals, and great individuals mean that quality must be built into the individual by his own efforts, and personal effort is foreign to a state where com-

petition and individual responsibility have been abandoned.

SOME CAUSES OF PAUPERISM OR HABITUAL  
DEPENDENCE

1. Those chargeable to the pauper himself.
  - a. Heredity (Criminal tendency, imbecility, and other mental defects).
  - b. Lack of self-respect.
  - c. Lack of industry.
  - d. Lack of thrift.
  - e. Unambitious associates.
  - f. Illness and injury, etc.
2. Those chargeable to government.
  - a. Emotional type of welfare and charity work, paid and volunteer.
    - (1) Too great a belief in the efficiency of laws and too little in the responsibility of men.
    - (2) Failure to recognize right of pauper to decent citizenship.
  - b. Lack of proper educational foundations.
  - c. Paternalism, active and passive.
  - d. Economic (equal opportunity).
  - e. Political catering to pauper voter.
  - f. Shortsighted and silly laws.
3. Those chargeable to organizations or individual giver.
  - a. Satisfaction of the giver.
  - b. Failure to recognize degrading effect of alms-taking.
  - c. Transferring welfare work from the home to the public agency.
4. Encouraging signs for the future.
  - a. New immigration law.
  - b. Common sense in welfare and charity work.
  - c. Tendency to shape community effort more toward affording dependant opportunity to help self.
  - d. Increasing study in sensible way by some welfare agencies.

It is impossible, of course, to cover this field in a discussion of this character. All that is attempted here is to point the way, and to emphasize a few guiding principles. There are a great many ramifications to this subject. Holding the quality of the citizen pauper in one's mind, it is easy to judge whether a method as a measure is beneficial or detrimental at once. All laws, for instance, should be judged by their ultimate analysis, according as they raise or lower the quality of the citizen.

Take for example, the unemployment dole. It is merely a premium on unemployment, and has a marked depressing effect on the citizen. The question of the old people's home emphasizes the need for substandard occupations for old people, also the need of a thoughtful community that would absorb the bulk of the old people into homes where they could be useful, self-respecting, and live out a normal, healthful end of their days.

The widow's pension is often a means of rearing crops of pauper-minded children. And so might

be enumerated many other devastating laws. Some of these laws are inherently vicious, others are vicious only on account of the way they are administered.

No discussion of a problem, especially one in which wholesale criticism plays a part, is complete, unless the way is indicated to remedy the same. Therefore, I wish to indicate briefly some of the measures, at least, that will improve the situation. To do this it is necessary, first of all, for the average citizen and then the community to fasten upon the desired result to be obtained. Second, stop laudation, emotional exploitation, and the congregating of the pauper. Treat him from the beginning as an individual capable of being rejuvenated.

This will include stopping all free public clinics by our profession, where the indigent gives nothing in return, also the congregating of these people even for examination. They should be examined and treated in every way as you would your private-pay patients. In this way they are made to feel at once that they are not discriminated against, and those ministering to them have an opportunity to renew hope and to instil pride and courage not possible under other circumstances.

It is my belief that all public charity should be paid for by taxation. This would at once get rid of undesirable publicity, shield the self-respecting indigent, and better allow the resources of the whole community to be put behind the unfortunate that he might be rehabilitated.

In conclusion, I wish to say that it is fortunate the economic welfare of the physician (who, by the way, is entitled to the normal prestige and reward belonging to all individuals who have made similar sacrifices) is in all ways parallel to the cause advocated by this paper, namely, the improvement in quality of the citizen. The physician should, therefore, in my opinion, seize leadership in this movement, and be in reality a true counsellor in human affairs by building up a quality citizenship, abating the damaging influences and encouraging all beneficial movements, including an improved heredity, to this end, and by so doing he will no longer be restricted in counsel to the one per cent of time period, but may supervise the other 99 per cent as well. But to be able to do this effectively the individual physician must devote much time and thought to the larger problems of human welfare.

# NORTHWEST MEDICINE

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## EDITORIAL

### SELF-CARE FOR DOCTORS

During the last three years many Pacific Northwest physicians died during the sixtieth decade of life, the list including several of our best known doctors. Most of these men died of cardiovascular disease. We know little of the etiology of cardiovascular disease other than that which is secondary to nephritis or endocarditis which are, of course, of infectious origin. Nor is the proportion of cardiovascular cases of this type here estimated. But it is probable that their total number is far less than the total number of cases which are accompanied by tension disorders of unknown etiology. Of the deaths in mind, practically all were due to this type of disease. Some resulted from hypertension and its immediate effects, including apoplexy. Others resulted from cardiac disease, of which angina was a symptom. The notable feature was that most of the men who so died worked hard and seldom relaxed. The average life expectancy at the time of death was at least fifteen years. Thus, of ten cases in mind, a total of one hundred and fifty years of life were sacrificed at a time when life should have been productive and happy. All of the victims were successful as success comes to physicians. Most of them were heads of families. The question arises as to what part in the early deaths of these men was taken by the strenuous lives which they lived. It is inconceivable that overwork did not contribute more to their deaths than did infections and other disease causes.

Physicians, who give so freely of their time serving others, often neglect themselves. Would it not be sound policy for every physician to maintain his own health through relaxation and exercise? Should he not continue his physical exercises not only through college years but after they are completed? In the early years of practice most men have strength and morale to do a fair day's work and yet find time for an hour or so of exercise at tennis, swimming, hiking or whatever may be one's athletic bent. With the beginning of the successful years, which come to most men if they come at all around the

age of thirty-five, some of these exercises are too strenuous and it might be a good plan at this time for all to follow the example set by labor unions, of working but five and one-half days each week. Should not every physician reserve for himself not only Sunday but a half day during the midweek, devoting the half day and Sunday to relaxation and exercise suited to his advancing years? There are few men who cannot afford to give a half day to relaxation and who will not in the end find themselves better off in health, happiness and estate therefrom.

Many doctors say they cannot afford a half day from work each week; but failure to take adequate rest may be paid for by early death. A half day each week from thirty-five to fifty-five years of age means a total of two hundred and sixty days during the twenty years. Against this, in the series of cases under consideration, may be placed an average loss of fifteen years of life. Allowing two hundred and sixty full days as a year's work, the loss was fifteen times that which would have resulted from resting a half day each week in addition, of course, to Sunday. No one is foolish enough to believe that all of these lives would have been prolonged an average of fifteen years, had their owners paid more attention to personal hygiene. But had only one life been prolonged an extra fifteen years because of this attention, the labor accomplished would have exceeded by fifty per cent the total losses of the other nine lives, had the owners of each rested one-half day per week more than he did. It seems fair to estimate that half of the lives would have been so prolonged, or at least that the average prolongation of life through better personal care would have averaged at least one-half of the full expectancy. And based on such an estimate, the total saving would have paid a premium of five hundred per cent, not counting the happiness to each individual concerned.

It is curious that the easy going, happy-go-lucky individual seldom worries about the losses that result from his having a good time. He has it. But the studious, painstaking, productive worker, who can least be spared, too frequently abuses his powers and shortens his life, to the detriment of himself, his family and the community in which he lives.



## THE QUESTION OF BIRTH CONTROL

Following the sixth international birth control conference in New York last March and the publication of papers and addresses delivered at this gathering, special attention has been paid to the matter of birth control not only in medical journals but in lay publications. The advocates of this procedure base their arguments on two general principles. First, is the desire to conserve the comfort and welfare of the mothers of the nation and to place a reasonable limit on the reproductive burdens to which they should be subjected. Second, the economists and sociologists stress the fact of overpopulation in all European countries, with the consequent menace of the approaching exhaustion of natural resources. While in our land there has always been abundant uncultivated sections as a recourse for overcrowding in the older sections, the economists already have set a definite period in the future, at which time an estimated increased population will probably reach the limit of natural production. At the same time the biologists and eugenists are much concerned with the great increase of the unfit and less desirable elements of society. Therefore, they also are interested in some form of birth control. On the other hand, this discussion has raised an uproar from the moralists and religionists who assert that the Creator has established procreation in the human race for the purpose of its maintenance, and that any effort to limit the result of nature's impulse in this respect is contrary to the divine purpose. This latter group was sufficiently forceful some years ago to bring about the enactment of laws both national and in some states that designate it a crime even to publish and circulate information relative to the limitation of offspring.

During recent years interest in this subject has spread both among the medical profession and the general public to such an extent that the Birth Control League of New York City has recently established a clinical research department for the purpose of conducting scientific research regarding contraceptive methods and making their results known to the medical profession; to keep in touch with physicians of the country who will give contraceptive advice, according to the laws of the localities in which they live; to refer inquirers to physicians for treatment; to aid in the establishment of clinics of this nature in connection with hospitals and dispensaries; to impart information before medical societies, social and civic organizations and to

participate in conservative and judicial activities along these lines. It is stated that this department seeks to confine its efforts within the scope of the law and to carry on this line of work for a finer motherhood and the production of better babies. For these purposes it invites the cooperation of the medical profession. This subject might well arouse thought among contemplative physicians.

## ANTIMEDICAL PROPAGANDA

At the present time an amazing and contradictory spectacle is presented in relation to medicine and public welfare in our country. Groups of physicians and scientists are laboring constantly and zealously for the discovery of the causes of disease and for the preparation of remedies and measures which may prevent its propagation and alleviation when established. Thousands of men and women are living witnesses to the success of these efforts, obtained through labor, sacrifice and in some cases loss of life on the part of these devotees to science. On the other hand, there are men and women, fired with militant enthusiasm, who devote their time and energies to the obstruction of these scientific efforts for the promotion of human welfare and the saving of human lives. Where in the realm of human activities is presented such an extraordinary example of strenuous opposition to welfare efforts, with human life the stake in controversy?

Resolutions of medical societies and publications in medical journals have had little effect in stemming these blind and fanatical attacks on altruistic, scientific labors. Through the efforts of nonmedical, as well as professional organizations, the public is awakening to the national menace of this antimicrobial propaganda. A recent issue of *The Outlook* has featured this situation, the immediate occasion being the threat from smallpox which has appeared in virulent form in some parts of the country. The views of ex-President Eliot are quoted in the following terms in a letter to the American Association for Medical Progress:

"We are in a position to know that these organizations have reached the dangerous point. It must be fully understood that, if this antimicrobial program should succeed, the hands of the doctors would be tied and no further progress in experimental medicine could be expected. No reliable insulin would be available for diabetes, no antitoxin would be possible for diphtheria or lockjaw, no vaccine could be procured to protect the country against smallpox, and it would be utterly impossible to test such essential drugs as ergot, pituitrin and digitalis."

The writer pays his respects to the personnel of those attacking scientific medicine. As an indication of their identity he offers the following quota-

tion from a published invitation from the official head of an antivivisection society:

"I invite all Antivaccinationists, Antivivisectionists, Eclectics, Homeopaths, Chiropraths, Osteopaths, Naturopaths of all branches, Christian Scientists, New Thoughtists, Theosophists, Medical Freedomists, and all brave and honest physicians of the Allopathic School (who secretly denounce the machinations and conduct of the political doctors) to send in their names and enroll as active participants in an Association of Free People against Medical Tyranny."

The writer discusses what would be the result if a state legislature were to pass a measure such as has been introduced in several states in recent times, forbidding animal experimentation or the administration of a drug to any animal if it gave him pain, thus stopping laboratory medical research with the consequent cessation in the production of diphtheria antitoxin and similar human remedies, as well as those for the cure of animal diseases. One's imagination can easily picture the calamity which would follow such action and the public uproar which would ensue. While such a tragedy would be dreadful to contemplate, nothing would so effectually throttle and permanently demolish these antimicrobial fanatics as the enactment of such a law on the part of one of our states. It is an established fact that false doctrines and unscientific propaganda can be most effectually killed through "pitiless publicity." It is to be hoped that the public press and literary magazines may see their way to continue the publication of facts such as those quoted above.

#### PROVISIONS FOR INTERNS

The necessity for hospital internship as full preparation for the practice of medicine has been much emphasized in recent years. The Council on Medical Education and Hospitals, of the American Medical Association, has issued a revised list of hospitals approved for internships. The list names 524 hospitals that are in position to furnish internships which will satisfy the medical colleges and state boards, as well as the demand of medical graduates for at least a year's general hospital experience. It is reported that there are 3,825 interns in these approved hospitals, with one-third of this number in nonapproved institutions. Attention is called to the fact that to secure interns in the past hospitals have offered moderate salaries as an inducement. At the present time, however, educational provisions in the institution must be the basis to attract recent graduates of the highest quality. A list of hospitals is also published that provides residencies in specialties for those who have already had the

experience of a general hospital internship. The publication of these lists of hospitals is of advantage not alone to those seeking the benefit of a hospital internship, but is also a stimulus to the hospital itself to provide an adequate instruction for these young physicians who are seeking this opportunity for their own professional advancement.

#### PROGRAM FOR PORTLAND MEETING

The officers of the Pacific Northwest Medical Association are reporting a very gratifying advance registration for the meeting in Portland, June 29 to July 1. The interest in the program is greater than that of any preceding meeting. Excursion rates have been granted on all railroad and steamship lines on the certificate plan, one and one-half fare for the round trip for the close-in territory. For the distant parts of Montana and Idaho, for Saskatchewan and Utah, summer tourists' rates, which will be less than one and one-half fare, will prevail.

The following is the complete program:

Alan N. Drury, M. D.; B. Ch.; M. A. (Sc.); Full time research worker, Medical Research Council, Eng.; Honorary Assistant, Cardiac Department, University College Hospital, London.

1. The Uses and Abuses of Clinical Signs in Cardiological Practice. Synopsis: Discussion of the signs today regarded as the most reliable in arriving at a diagnosis of cardiac failure, cardiac enlargement and valvular heart disease, their relative value, dangers of misinterpretation.

2. The Application of Electrocardiography to Practice. Synopsis: What the string-galvanometer is capable of recording in clinical practice; what can be deduced safely from such a record; when it is necessary to have recourse to the electrocardiogram; the importance of the electrocardiogram in the diagnosis of myocardial disease.

3. Some Observations upon Arteriovenous Aneurysm. Synopsis: (a) General review of the observations made in this condition, with special reference to the general arterial pressure, the form and character of the pulse, capillary pulsation, and the amount of blood which leaks from the artery into the vein. (b) Observations upon the general venous pressure in these cases; output of the heart; the light these observations throw upon the cause of cardiac enlargement which is found. Discussion of whether the reason put forward in these cases is applicable to cardiac enlargement in aortic regurgitation, anemias, etc.

Note. These lectures are based upon observations made upon dogs, in which an artificial arteriovenous fistula had been made.

4. Newer Physiology and Physiological Research in Heart Disorders. Synopsis: Newer researches, differentiation of the function of the sinoauricular node and the auricular muscle conduction disturbances in the normal and diseased heart, observations upon the propagation of the contraction process through damaged muscle, the application of these findings to conduction in the heart generally.

Sir Henry M. W. Gray, K. B. E.; C. B.; C. M. G. L. L. D.; and M. B. Aberdeen (Scotland); F. R. C. S.

Edinburgh; Surgeon-in-Chief, Royal Victoria Hospital, etc., Montreal.

1. Developmental Abnormalities Affecting the Colon, Their Far-Reaching Effects, Suggested Treatment.

2. Acute Intestinal Obstruction.

3. Carcinoma Mammae.

McKim Marriott, B. S.; M. D.; Professor of Pediatrics and Dean of Washington University School of Medicine; Physician-in-Chief to the St. Louis Children's Hospital, St. Louis, Mo.

1. Some Newer Viewpoints Concerning the Nature and Treatment of Nephritis.

2. Acidosis.

3. Some Problems in Infant Nutrition (before the North Pacific Pediatric Association).

Nathaniel Allison, M. D.; Professor of Orthopedic Surgery, Harvard Medical School; Chief of the Orthopedic Service, Massachusetts General Hospital, Boston.

1. The Diagnosis of Knee Joint Diseases and Injuries.

2. The Diagnosis of Hip Joint Diseases.

3. Address before the Pacific Northwest Orthopedic Association.

Lewellys F. Barker, M. D.; L. L. D.; Professor of Clinical Medicine, Johns Hopkins University Medical School; Visiting Physician, Johns Hopkins Hospital, etc., Baltimore, Md.

1. Psychic Factors in General Medical Diagnosis.

2. Medical Aspects of Gastric Ulcer.

3. Present Status and Future Prospects of Endocrinology.

James B. Herrick, A. M.; M. D.; Professor and Head of the Department of Medicine, Rush Medical College; Consulting Physician, Presbyterian Hospital, etc., Chicago, Ill.

1. Diseases of the Coronary Artery.

2. Angina Pectoris.

3. Syphilis of the Heart and Aorta.

George Neil Stewart, M. A.; D. Sc.; M. D.; L. L. D.; Professor of Experimental Medicine and Director of the H. K. Cushing Laboratory, Western Reserve University Medical School, Cleveland, Ohio.

1. Physiology of the Suprarenal Glands.

2. Physiology of the Thyroid Gland.

3. Physiology of the Islands of Langerhans.

Henry Woltman, Ph. D.; M. D.; Associate Neurologist, Mayo Clinic, Rochester, Minn.

1. The Syndrome of Compression of the Spinal Cord.

2. The Significance of Pain as a Symptom in the Diagnosis of Diseases of the Nervous System.

Reginald Fitz, A. B.; M. D.; Associate Professor of Medicine, Harvard University Medical School; Visiting Physician, Peter Bent Brigham Hospital, Boston, Mass.

1. The Action of Insulin.

2. The Importance of a Routine Wassermann Test in Private Practice.

Barney Brooks, B. S.; M. D.; Associate Professor of Surgery, Washington University Medical School; Associate Surgeon, Barnes Hospital, St. Louis Children's Hospital, and Jewish Hospital, St. Louis; Professor-Elect of Surgery, Vanderbilt University Medical School, Nashville, Tenn.

1. The Anatomic and Physiologic Pathological Changes Associated with Diseases of the Circulation of the Extremities.

2. The Clinical Manifestations of Diseases of the Circulation of the Extremities. Methods of Diagnosis and Treatment.

Hugh Cabot, A. B.; M. D.; C. M. G.; F. A. C. S.; Professor of Surgery, University of Michigan Medical

School; Surgeon-in-Chief, University of Michigan Hospital, Ann Arbor, Mich.

1. Management of Small Stones in Kidney and Ureter.

2. Renal Tuberculosis.

R. L. Benson, A. M.; M. D.; Professor of Pathology, University of Oregon Medical School, Portland, Ore.

1. The Pathology of Coronary Artery Sclerosis. Anatomy and Histology.

Amplifiers will be installed in the main meeting place so that every one may hear distinctly in the general sessions.

The following societies have affiliated their meetings with this session of the Pacific Northwest Medical Association in rooms adjacent to the Pacific Northwest Medical Association in the Multnomah Hotel:

The meeting of the North Pacific Pediatric Society will occur Monday, June 29:

8:30 A. M. Case Report. Dr. J. B. Bilderback, Portland, Ore.

10:00 A. M. The Proper Clothing and Shoes for the Growing Child. Dr. A. H. Gray, Seattle, Wash.

10:25 A. M. Some problems in Infant Nutrition. Dr. McKim Marriott, St. Louis, Mo.

11:45 A. M. Business Meeting.

1:30 P. M. Some Points of Technic in the Conduct of Private Pediatric Practice. Dr. P. D. McCornack, Spokane, Wash.

2:30 P. M. Sympathectomy in the Treatment of Little's Disease. Dr. H. E. Coe, Seattle, Wash.

3:30 P. M. Some Metabolic Observations in Cases of Herter's Disease. Dr. H. Spohn and Dr. R. E. Coleman, Vancouver, B. C.

The meeting of the Pacific Northwest Urological Society will occur Monday evening, June 29, at a dinner. The program is as follows.

1. Dinner.

2. Address, Dr. Hugh Cabot; Tumors of the Kidney with Particular Reference to the Diagnosis and Operative Treatment.

3. Teratoma of the Testicle; Dr. Alexander B. Hepler.

4. Stricture of the Ureter; Dr. O. A. Nelson.

5. Tumors of the Bladder; Dr. McKay.

The Organization Meeting of the Pacific Northwest Orthopedic Society will occur Wednesday evening, July 1, at a dinner at which Dr. Nathaniel Allison will give an address.

1. Thursday morning at 9:00 A. M. Dr. Otis F. Akin will hold a Dry Clinic at the Good Samaritan's Hospital at which Dr. Allison will be asked to participate in the discussions.

2. At noon there will be a luncheon at the University Club.

3. At 1:30 P. M. the society will visit the Shriner's Hospital for Crippled Children, where a Dry Clinic will be held by Dr. Richard Dillehunt and Charles McClure.

One of the outstanding features of the Pacific Northwest Medical Association meeting will be the scientific exhibit in rooms of the Multnomah Hotel. This will be second to none in the country, except that of the American Medical Association. It is

hoped that every one in attendance at the meeting will visit the exhibit. In addition there will be a commercial exhibit of a high order that will not only be interesting, but will be instructive to all in attendance.

A dinner for registrants and friends will be arranged for, the details of which will be announced later.

Golf games will be arranged for before and after the sessions by the golf committee.

Registration may be accomplished by sending ten dollars to Dr. F. Epplen, 422 Paulsen Building, Spokane, Wash., or to the Committee of Arrangements, 709 Stevens Building, Portland, Ore.

Hotel reservations may be made by writing to Dr. Stuart H. Sheldon, Selling Building, Portland, Ore., or to the Committee of Arrangements.

It is expected that there will be an attendance of over eight hundred at the meeting.

#### NEXT MONTH'S LEWISTOWN MEETING

The Medical Association of Montana will hold its annual meeting at Lewistown, July 8-9.

The scientific and business sessions will be held in the Junior High School. Register here. Headquarters will be held at "Pick" Burke's Hotel. The Lewistown Country Club extends courtesies to the members and their families. Wednesday evening, July 8, the annual smoker will be staged at the Elks Club. Appropriate entertainment will be arranged for the ladies.

The House of Delegates meets Tuesday, July 9, at 2 p.m., at Burke Hotel. County Society Presidents and Secretaries meet Wednesday p.m., time and place to be announced later.

#### PROGRAM

Address of Welcome, Mayor John Briscoe. Response for Association. A. Karsted, Butte.

1. Why a Child Welfare Division in State Board of Health. F. S. Bradley, Helena.

2. Tularemia. W. F. Cogswell, Helena.

3. Recent Results in the Study of the Tick Virus of Rocky Mountain Spotted Fever. R. R. Parker, Hamilton.

4. The Use of Air in the Diagnosis of Intracranial Lesions. Geo. W. Swift, Seattle.

5. The Treatment of Frontal Sinusitis. J. G. Parsons, Lewistown.

6. Mental Symptoms of Goiter. R. B. Tracy, Butte.

7. Thymic Enlargement. E. A. Weldon, Lewistown.

8. Diagnosis and Treatment of Exophthalmic Goiter. H. S. Plummer, Rochester, Minn.

9. Thyroid Surgery. J. de J. Pemberton, Rochester, Minn.

10. Postoperative Peritoneal Adhesions. T. C. Witherspoon, Butte.

11. The Hunter Operation in the Treatment of Little's Disease. H. E. Coe, Seattle.

12. Recent Work on Cancer. M. J. Scott, Butte.

The President's Address. Geo. McGrath, Hamilton.

W. C. Woodward of Chicago, Secretary of the Bureau of Medicolegal Activities, will be present.

A. R. Mitchell, of Lincoln, Neb., Trustee of the A. M. A., will be a guest of the Association.

Henry Schmitz, Professor of Gynecology, Loyola Univ., Chicago, will deliver an address.

It is hoped that Dr. Frances of U. S. P. H. S., Washington, D. C., and Dr. Eugene Kelley, State Health Officer of Mass., will be able to be present.

#### MONTANA ACADEMY OF OTOPHTHALMOLOGY

The Montana Academy of Oto-Ophthalmology will meet in Lewistown, July 7, 1925, the day preceding the Montana State Medical meeting. The guests of honor will be Dr. George W. Swift of Seattle, Wash., and Dr. Harry Woodruff of Chicago, Ill. Papers will also be given by local Montana oto-ophthalmologists. This is the fourth semi-annual meeting of the society. Dr. Charles Coulter, of Helena, is President and Dr. L. G. Dunlap, of Anaconda, Secretary-treasurer.

#### UNIVERSITY OF WASHINGTON GRADUATE LECTURES

The only course of medical instruction given by the University of Washington is centered in the postgraduate course of lectures offered the medical profession of the Northwest during the summer. This year the standard established in former years will be maintained. This statement is substantiated by mention of the four men who are to present the lectures. Prof. L. W. Barker, from Johns Hopkins, will give the course in medicine; Prof. V. P. Blair, of Washington University, St. Louis, will lecture on surgery; Prof. G. G. Clark, from Pennsylvania, presents obstetrics and gynecology; Prof. Peter Bassoe, of Rush, will lecture on neurology. There will be the usual social functions of previous years and the dinner for all in attendance on the lectures. Those who have been present at previous courses will appreciate the opportunities for personal association which characterize these lecture courses. It is proposed to limit the attendance to three hundred, so that the personal touch may not be lost, which is so useful in this course of instructions.

## MEDICAL NOTES

### NEW ADVERTISEMENTS

Attention is called to the following new advertisements appearing in this issue. The University of Washington announces its Postgraduate Course of Lectures (page 16). The Lang Drug Co. announces its prescription business (page 16).

**A Great Medical Library.** Everyone concerned in assembling and maintaining a medical library will be interested in the announcement of the plans for the construction of the new building for the New York Academy of Medicine. This organization represents the local medical society of the city of New York. Its chief feature is the great medical library, which has been in the process of accumulation for a long period of years. In size it is exceeded only by the Surgeon General's library at Washington. It has long since outgrown its present accommodations and more extensive quarters have been a necessity. The possibility of supplying this want has been presented by the Carnegie Corporation which has appropriated \$1,550,000 for the new structure. The main building will be six stories in height, and provision made for the construction of book stacks which will ultimately provide storage for one million books. The present construction will provide space for the addition of books, at the present rate of growth, for the next forty-five years. This library will be a model for all medical libraries of the land.

**Public Health Summer Sessions.** The United States Public Health service has established a series of summer sessions in connection with universities and colleges in different states, for the purpose of affording sanitarians the opportunity of acquiring the latest information regarding public health work. These courses range from three to eight weeks of special study during the summer months. The lecturers at these courses include men most prominent and best known in the work of public health and sanitation. On the Pacific Coast such courses of general interest to physicians and sanitarians will be presented at the University of Oregon, at Eugene, and the University of California, at Berkeley, during the six weeks, June 22-August 31.

**Memorial to Naturalist.** A distinguished group of doctors and naturalists are raising a fund to the memory of Ernest H. Baynes, author and naturalist, who died last January. While his most distinguished work related to the preservation of wild animals of this country, he was closely associated with the medical profession, owing to his activity in investigating and disproving the sensational statements of antivivisectionists. He helped to organize the American Association for Medical Progress, which is concerned in the dissemination of truth concerning the value of scientific medicine. This fund will be administered by the First National Bank of Boston.

### OREGON

**Hospital Permit Issued.** A permit was last month issued at Portland for the erection of the proposed Doernbecher Memorial hospital for crippled children on Marquam hill. It will be five stories in height of reinforced concrete and will cost about \$250,000. It is designed to accommodate sixty patients.

**Hospital Site Considered.** Government officials, with representatives of various civic and official bodies of Portland, last month inspected the proposed site for the veterans' hospital on Marquam hill, for the construction of which the last session of Congress provided the sum of \$1,350,000. The University of Oregon Medical School has donated a fifteen-acre tract to the Government for this purpose. In connection with the medical school, county hospital and Doernbecher hospital, this institution will help to complete a notable group of medical buildings.

**New Wing for Hospital.** The Eastern Oregon State hospital at Pendleton will be increased in size by the construction of a new wing which will cost about \$225,000. Bids have been called for this work which is expected to begin in July.

**Coos-Curry Medical Society** held a meeting at Marshfield, May 5. Twelve members were in attendance. Papers were read by Drs. Walter Hayden, of Empire; Wm. Horsfall, of Marshfield, and J. W. Wheeler, of Gold Beach.

**Physicians Visit Europe.** The interstate postgraduate clinic tour for American physicians has attracted a number of Oregon men. The following joined the party last month for the purpose of visiting clinics in Canada, Great Britain and France: Drs. J. C. Vandeventer, of Bend; F. H. Thompson, of Salem; Ralph Fenton, of Portland.

**Dr. F. E. Barrett** has located for practice at Vale. He has practiced for a number of years in Ogden, Utah.

**Dr. Harry Flower** has located for practice at Milton. He has recently practiced in Wenatchee, Wash.

### WASHINGTON

**Formal Opening of Medical Building.** Last month the Medical and Dental Building, of Seattle, was formally opened with a reception for its tenants and their friends. This is an eighteen story structure, built according to the latest approved plans and equipment for a specialized building of this character. It is stated that 95 per cent of the space is occupied. In the basement is an auditorium which the medical and dental societies will utilize for their meetings. There is also a large garage for the use of the tenants and their patients. A capacious public surgery is equipped with all the necessary furnishings and surgical requirements, with sufficient beds and attending nurses to answer the requirements for minor surgical work.

**Plans for New Hospital.** The Seattle General Hospital has for a long time contemplated the construction of a new building, since the present institution has been outgrown and is not up-to-date. The trust-

tees have purchased the block between Fifth and Sixth Avenues and Marion and Columbia Streets, which is diagonally across from the present location. This site has been obtained for \$150,000. The tentative plan is to construct a hospital to cost \$1,000,000. It is proposed to start an intensive campaign in a short time to raise the necessary funds.

**New Hospital Planned.** A new 300-bed building is to be constructed for the Swedish Hospital of Seattle, on its own ground, adjacent to the present hospital. The initial unit to contain 100 beds at a cost of \$250,000 will first be constructed, the completed institution being built as the demand warrants it. The hospital association has the funds in hand for the construction of the first unit and will not call on the public for subscription.

**Hospital Body Chartered.** A state charter has been given the Walla Walla valley hospital association to build and operate a hospital on a nonprofit sharing basis. It is estimated the institution will cost about \$170,000. The board of management comprises a group of the prominent physicians of Walla Walla.

**Hospital Changes Hands.** The Centralia General hospital has been purchased by Dr. D. O. Nugent, the sale price being \$40,000. Improvements have been made to make it an up-to-date institution. It will be operated as an open hospital, where all physicians will have the opportunity of treating their patients.

**Hospital Damaged by Fire.** The Walla Walla hospital was damaged by fire to the extent of about \$2000 on May 2. Dr. Croop, owner of the hospital, states it has accommodations for fifty patients. This institution has been unfortunate in having five fires in the last ten years.

**Sanitarium to be Constructed.** It is reported that Dr. A. W. Bridge, of Tacoma, will construct a sanitarium at Ohanapcosh Hot Springs to cost about \$10,000. The site comprises about five acres, located on a river of the same name in the U. S. Forest reserve in the southwest corner of the Rainier National park. The building will be 67 by 113 feet. Beside accommodations for guests, the basement will contain the usual appliances and equipment for institutions of this class.

**Addition to Hospital.** A permit has been granted for the construction of an addition to St. Joseph Hospital in Bellingham. This will cost about \$10,000 and its construction will begin soon.

**Hospital Sold.** The Toppenish hospital, which has been under the control of Dr. W. B. Carpenter, has been sold to Dr. F. M. Greenwood, who has recently located in that city. He formerly practiced at Holton, Kansas.

**Drugless Practitioners Barred from Hospital:** The Pierce county commissioners have decided that only medical doctors shall practice in the county hospital, thus rescinding previous action which permitted drugless healers and other practitioners to treat patients in the institution. Patients wishing the services of other forms of practitioners may obtain the same on application to the county commissioners.

**Spotted Fever.** The first case of Rocky Mountain fever to be reported in Washington this year, appeared near Harrington last month. Cases of this disease are rare in that section of the country, since the necessary ticks to transmit it are not common in that region.

**Health Commission Appointed.** The directors of the Chamber of Commerce, of Walla Walla, have appointed a commission of five members to work with the health department of the city for the maintenance of better health conditions in the community. The chairman of the commission is Dr. F. C. Robison.

**Speaker Before Bar Association.** Dr. D. A. Nicholson, of Seattle, president of the State Medical Association, addressed the Pierce County Bar Association, May 14, on the subject "The Medical Man as a Witness."

**Dr. C. T. Smith,** formerly of Seattle, has been appointed assistant medical officer to the United States government hospital No. 52, at Boise barracks. He replaces Dr. W. B. Swackhamer who has been assigned to the government hospital in Portland.

**Director of Health Resigns.** Dr. Paul A. Turner, of Seattle, State Director of Health, resigned from this office about the middle of May the same to take effect immediately. He was subsequently appointed Medical Inspector of the Seattle Department of Health and Sanitation as assistant to Dr. G. N. McLaughlin, Health Commissioner.

**Verdict for Physician.** A recent malpractice suit against Dr. R. T. Congdon, of Wenatchee, resulted in a verdict in his favor. About two years ago a similar verdict was returned but a retrial was directed as result of appeal to the supreme court. Since this last verdict was given the superior court judge has granted another retrial of the case.

**Resident County Physician.** Dr. Burton Brown has been appointed resident physician of the Pierce county hospital, at Tacoma. He has recently been connected with the Cushman hospital. A committee of five physicians will handle hospital affairs in association with Dr. Brown.

**Appointed Flight Surgeon.** Dr. E. E. Langley, of Spokane, has recently been appointed flight surgeon of the 116th observation squadron, N. G. W. He will have charge of the examination of officers in the aviation unit.

**Doctor Will Care for Oarsmen.** Dr. Don Palmer, of Seattle, has been appointed to accompany the Washington University crew on its journey to Poughkeepsie, where they will compete in the intercollegiate races. Last year two of the crew were ill while training for the races. This year they will be skillfully cared for in case of sickness.

**Appointed National Delegate.** Dr. Maud Parker, of Seattle, attended the sixth quinquennial convention of the International Council of Women last month in Washington, D. C., as a representative of the Medical Women's National Association.

**Malpractice Suit Dismissed.** A malpractice suit brought against Dr. W. E. Fordyce, of Sunnyside, has been dismissed by the presiding judge. The complainant charged damage in the treatment of a dislocated shoulder. The dismissal of the suit is a vindication for the physician.

**New County Hospital Officer.** Dr. W. F. Nagler, of Yakima, has been appointed city and county health officer in place of Dr. H. H. Smith, who has retired on account of poor health.

**Dr. S. V. Hoopman**, of Seattle, has been appointed State Medical Director for the Modern Woodmen of America, in place of Dr. F. J. Stewart, of Tacoma, who died recently.

**Doctors Promoted.** Dr. Ralph Hendricks, health commissioner of Spokane, has been commissioned lieutenant colonel in the United States Medical Reserve. Dr. W. W. Brand, of Prosser, has been promoted to the rank of major in the medical reserve corps; Dr. E. A. Rich, of Tacoma, to rank of colonel and Dr. W. W. Brand, of Prosser, to grade of major.

**Dr. E. L. Barr**, of Centralia, has arrived home after spending a period of study in Vienna, Paris and London. He also devoted some time to visiting points of interest in the different European countries.

**Dr. C. C. Tiffin**, of Seattle, sailed last month for Europe, where he will pursue postgraduate studies and visit different cities for pleasure and entertainment.

**Dr. S. H. Johnson**, of Bellingham, sailed for Europe last month on the international postgraduate clinic tour of the hospitals in Canada, Great Britain and France.

**Dr. V. W. Spickard**, of Seattle, sailed from New York last month for six months' trip abroad. A greater part of the time will be spent in Vienna.

**Dr. A. P. Hughes**, who has practiced for some time at Morton, has located for practice at Algona.

**Elected President.** Dr. Jacob Smith, of Bellingham, has recently been elected president of the Rotary Club of that city.

#### IDAHO

**Hospital Standardization Killed.** The county commissioners at Twin Falls have reversed themselves, regarding the management of the Twin Falls county hospital. They have followed the advice of their legal advisor who declared that the board had no authority to discriminate against osteopaths and chiropractors holding licenses in the state. The county prosecutor previously had expressed the belief that standardization could be legalized, provided a separate room was set aside for chiropractors and osteopaths. This arrangement was not satisfactory to both sides in the controversy.

**Permanency of Veterans Hospital Assured.** The officials of the Veterans bureau in Washington have given assurance that Veterans hospital No. 52, at Boise barracks, will be retained as a permanent hospital as long as the work of the Veterans bureau continues. General Hines was reported to state the

consulting engineer will make a survey for necessary improvements in the institution.

**Sanitarium Completed.** The new \$50,000 hospital and sanitarium at Lava Hot Springs was completed last month and prepared to receive patients. Dr. Kackley will be in charge of the institution, while Dr. Rich, of Lava Hot Springs, will be chief assistant.

**Dr. J. C. Dwyer**, of Coeur d'Alene, has joined the international clinic tour of several hundred physicians, which will attend clinics in eastern Canadian cities, British Isles and France.

**Dr. E. N. Roberts**, of Pocatello, last month joined the international clinic tour to visit the hospitals of Eastern Canada, Great Britain and France.

#### MONTANA

**Cure for Spotted Fever.** The production of a serum for the relief of spotted fever has been in process of experimentation for a long time. Dr. Spencer, who has been in charge of the state laboratory work, has reported that a serum has been prepared which will probably confer immunity against the disease. While this has not been demonstrated in man, it has proven effective among lower animals. Thus far no cure for the disease has been discovered, although such has been reported in the past.

**Dr. Arthur Johnson**, who has practiced for several years at Helena, has accepted an appointment as assistant to the state hospital for the insane at Napa, Calif.

**Dr. J. E. Ragsdale**, eye, ear, nose and throat specialist, who has left Billings, is now located at Alhambra, Calif.

**Dr. R. C. Kirkwood**, of Washington, has gone to Livingston to be associated with Dr. Windsor in the Park Hospital.

**Drs. C. N. Grensel** and **W. C. Cotton**, of Billings, Majors in the U. S. Reserve, are attending the school for medical officers in San Francisco.

**Dr. H. J. Huene** has reopened his office in Forsythe after a year's absence.

**Dr. W. F. Cogswell**, Secretary of State Board of Health, Helena, **J. G. O'Brien** and **J. A. Donovan**, of Butte, are among those who were at A. M. A. meeting in Atlantic City.

**Dr. H. E. Armstrong** attended meetings of the Minnesota Medical Association and the Twin City clinics.

**Dr. C. T. Pigot**, of Roundup, delegate to the A. M. A. at Atlantic City, expects to attend the Imperial Shrine Ceremonial in California before returning home in time for the annual session of Montana Medical Association.

#### OBITUARIES

**Dr. Melville C. Strickland**, of Forest Grove, Ore., died May 16. He was born in Virginia in May, 1866. After studying at the University of North Carolina he studied medicine at Louisville, Ky. and later graduated from Jefferson medical college. He took post-

graduate studies at Vienna, Paris and London. Thirty years ago he located for practice at Oregon City, where he continued until two years ago, when he retired on account of ill health. He had resided at Forest Grove for about two years.

**Dr. O. B. Whitford**, of Butte, Mont., died May 4, from cerebral hemorrhage at 91 years. He was born in Ohio in 1834. He graduated from the Eclectic Institute of Cincinnati in 1865. He went to Montana in its early days, first practicing at Alder Grove and Virginia City, later removing to Deer Lodge. He located in Butte in 1875, erecting a log cabin for an office, where he remained for forty-five years and from which evolved the Miners hospital. He had a very extensive practice with a reputation extending over a wide extent of territory. He was mayor of Butte in 1884 and at one time served as county physician. He served in the Indian uprisings in 1877 and participated in the battle of Big Hole. For the past three years he lived in Portland, Ore., but several months ago returned to Butte and resumed practice.

**Dr. Charles A. Barnes**, of Seattle, Wash., died April 7, at eighty-nine years of age. He was born in Vermont in 1836. He entered the United States service in 1857, operating a wagon supply train from Kansas to Wyoming. During the Civil war he served with a medical corps. He graduated from Rush medical college in 1864. He practiced in various places in Indiana, among them being Greenfield, where he was the physician and friend of James Whitcomb Riley. He has lived in Seattle for a number of years. If he had lived until July he and his wife would have celebrated their sixtieth wedding anniversary.

**Dr. John S. Parsons**, of Ashland, Ore., died May 11, following cerebral hemorrhage. He was seventy-four years of age. He was born in Pennsylvania in 1850. After graduating from Gettysburg College, he received his medical degree from Jefferson Medical College in 1873. After internship at St. Mary's Hospital, Philadelphia, he practiced in Indiana, later moving to South Dakota. He located at Ashland in 1880. A practice of forty years endeared him to a large circle of friends.

**Dr. Charles B. King**, of Cottage Grove, Ore., died April 29, following an attack of cerebral hemorrhage. He was born in 1846. He served in the Civil war with the 5th Tennessee cavalry. He moved to Oregon in 1895, practicing first at Yoncalla. Later he moved to Eugene and sixteen years ago located at Cottage Grove.

**Dr. Herman J. Betten**, aged fifty-three, died at Spokane, Wash., May 20. He formerly practiced in Montana, but eight years ago moved to Spokane on account of his health. He lived in this city during this period except for two years, when he resided at Anatone. Because of poor health he has not practiced during recent years.

## REPORTS OF SOCIETY MEETINGS

### OREGON

#### PORTLAND CITY AND COUNTY MEDICAL SOCIETY

Pres., H. C. Bean; Secty., K. H. Martzloff

A meeting of Portland City and County Medical Society was held at Portland Hotel, Portland, Ore., May 6, being called to order by Dr. A. C. Smith, in the absence of Drs. Bean and Benson. Minutes of previous meeting were read and accepted.

The name of Dr. Walter W. Black was read as applicant for membership, his application having been approved by the board of censors.

The first paper was read by Dr. W. F. Patrick, on "The Clinical Examination of the Sick Child." It contained many suggestions and reminders of distinct value in the examination of sick children.

The second paper was read by Dr. Eugene Rockey on "Periarterial Sympathectomy, Indications for the Operation, Technic and a Report of the Results in Three Cases." This was enjoyable and especially valuable for its frank presentation of the results in his own cases as well as his conservative attitude concerning the indications for the operation and its ultimate results. The discussion was opened by Dr. House, followed by Drs. Baird and Josephi.

#### SOUTHERN OREGON MEDICAL SOCIETY

Pres., R. W. Stearns; Secty., W. W. P. Holt

The Southern Oregon Medical Society held a meeting at Grants Pass, May 12, in connection with a luncheon. The speakers at the meeting were: Dr. R. A. Stearns, president, of Grants Pass; Drs. G. A. Cathey, F. E. Diemer, Eugene Mattis, H. C. Bean and O. F. Akin, Portland; Dr. F. G. Swedenburg, Ashland; Drs. W. W. Vinson and R. E. Green, Medford.

### WASHINGTON

#### KING COUNTY MEDICAL SOCIETY

Pres., A. C. Crookall; Secty., C. E. Watts

The surgical section of the King County Medical Society held a meeting May 11, Chairman Dr. R. D. Forbes presiding. Forty-two members were present.

The first paper was read by Dr. O. T. Dean on "Oral Infection," illustrated by lantern slides. He brought out the manner in which these infections are caused, the most common routes of extension, the complications which usually develop and how they are often difficult to diagnose, if seen late in their development. Many unsuccessful results are due to the use of local and esthetics and the establishing of inadequate drainage. The earlier the drainage is established, the better the results. The paper was discussed by Drs. Stillson, Mitchell and Perry.

Dr. D. V. Trueblood gave an interesting talk on his recent trip East. He spoke of heliotherapy in surgical tuberculosis. Diseases of the bones and joints yield remarkably well with excellent results without



the use of plaster casts. In a New York institution more experimental work is being done. Treatment is similar to that used in Switzerland and England. Rest, food, fresh air are common to all. Sunlight is one of the most important. Local and orthopedic measures were little used in these institutions. It was Dr. Trueblood's opinion that this treatment could be successfully used in Seattle.

A meeting of the medical section of the society was held May 18.

The meeting was turned over to the Seattle Radiological Society, Dr. Dwyer taking the chair.

The first paper was by Dr. John Dawson on "Radiography as an Aid to Diagnosis." He stressed the importance of carrying out a complete physical examination and the routine laboratory tests before resorting to x-ray as a diagnostic aid. Sacroiliac slip cannot be diagnosed without a complete pelvic picture, including the pelvic arch. Skull pictures and all joints should always be in stereo. In mastoid work, the normal and affected side should always be taken at the same time, preferably on the same plate. Spine pictures should be taken on the largest plate obtainable. X-rays may be of extreme value in diagnosis of suspected pregnancy or malposition. Nearly all forms of leukemia, Hodgkin's disease and superficial malignancies materially benefited or completely cured by X-ray. He condemned the practice of resorting to radiology only after surgical removal of a malignancy and frequently only after metastasis had advanced to such a degree that the case was hopeless. He called attention to the rapid advances in medicine in general and radiology in particular in the past few years, and the difficulties experienced by many physicians today in making proper use of radiology, because they had had no training in the subject. The paper was discussed by Drs. Miller, Winslow, Davidson and Hain.

The second paper was by Dr. Hergert on "Technic and Interpretation of Complete Dental x-ray Examination." He offered "radiodontia" as a satisfactory word to describe the art and science of producing and interpreting radiographs of the teeth and contiguous structures. The importance of oral sepsis, its systemic effect, and frequent miraculous results stimulated great radiodontic activity among the dental profession. Lay writers took up the subject and as a result radiodontia and dentistry have received more publicity in the past ten years than in the century of its existence. Although there has been too great a tendency to discard clinical experience in treating teeth, radiodontic examination should be included in a routine examination by a physician. He deplored the fact that technicians, demonstrators and others even less qualified become dental x-ray diagnosticians over night. He condemned the practice of patronizing these laboratories. He outlined the accepted routine of examination of patient and teeth. He explained the field for the specialist in radiodontia. He closed by showing slides of various points in interpretation of dental radiographs.

#### LEWIS COUNTY MEDICAL SOCIETY

Pres., R. H. Campbell; Secty., Rush Banks

Lewis County Medical Society held its monthly meeting at Centralia, May 11.

Dr. Frederick Slyfield, of Seattle, delivered an address on symptoms and treatment of tuberculosis. Dr. R. H. Campbell, of Vader, president of the society, was elected delegate to the state medical association.

#### PIERCE COUNTY MEDICAL SOCIETY

Pres., W. B. McCreery; Secty., W. B. Peuney

The regular meeting of Pierce County Medical Society was held at United States Veterans' Hospital No. 59, Tacoma, Wash., May 12, 1925, Vice-President Dodds in the chair.

#### PROGRAM

"Resume of Lethargic Encephalitis, with Presentation of Cases," Dr. George M. Melvin. The history, etiology, symptoms were presented, with five cases, three of which were of the chronic type, showing facial mask, drooling of saliva, stiffness of muscles and almost complete disability. These all followed acute encephalitis lethargica, from four to six years previous. He presented two recent cases, one of which had blurring of vision as the main symptom, while the other presented the symptom of insomnia rather than sleepiness. Dr. Snoke discussed the paper.

"Regional Anesthesia in Major and Minor Surgery," Dr. George E. Pfeiffer. Different methods of regional or local anesthesia were discussed with their advantages and disadvantages. Novocain should be used one-half to two per cent, solution being freshly prepared. Toxic reaction may result from even small quantities of novocain. Several charts were presented, showing diagrammatically the different methods that can be used in regional anesthesia. The paper was discussed by Drs. E. C. Yoder, E. C. Wheeler and Evan Hyslin.

"Case Reports of Diabetes," Dr. Burton A. Brown. Ten cases under treatment were presented. It is difficult to control the dietary part of treatment in the hospital.

"Case Report and x-ray Demonstration of a Case of Pathologic Dextrocardia," Dr. I. A. Dix. The x-ray pictures were shown and the case discussed.

Dr. Keller spoke of the picture at the Rialto Theatre, "How the Fires of the Body are Fed," which is being shown by the courtesy of Mr. C. J. Cummings, Chairman of the National Hospital Day Association.

A rising vote of thanks was given to Col. Leverton and his able associates for their presentation of the program.

A regular meeting of the Society was held at Portland Hotel, May 20. Minutes of the previous meeting were read and approved.

Dr. Walter Black was elected to membership in the Society.

A letter was read from Surgeon General Ireland in which he requested cooperation of the medical profession in the examination of applicants who contemplate in enrolling in the citizens military training camps this summer.

The first paper was read by Dr. J. C. McCusker on "Standardized Procedures in Prenatal Care."

The second paper was read by Dr. Harry Torrey on "The Influence of Experimental Hyperthyroidism on Differentiation in the Domestic Fowl and a Physiological Antagonism between Thyroid and Ovary." This interesting paper was accompanied by a lantern slide demonstration as well as several stuffed fowls representing some of the typical results which he obtained in his experiments. Drs. Burget and Coffen discussed the paper.

#### SNOHOMISH COUNTY MEDICAL SOCIETY

Pres., W. V. Fulton; Secty., N. L. Thompson

Snohomish County medical society held a meeting in Snohomish, May 5, with a good attendance from that city and Everett.

Papers were read by Drs. Borton, of Sultan; Allison, of Monroe, and Tiffin, of Seattle.

#### YAKIMA COUNTY MEDICAL SOCIETY

Pres. J. F. Scott; Secty., J. P. London

Yakima County Medical Society held a meeting at Yakima May 18, at St. Elizabeth hospital.

Dr. A. J. Helton was elected delegate to the meeting of the state association in September, Dr. F. W. Nagler being appointed alternate.

In connection with a meeting of the hospital staff, Dr. E. S. West read a paper on goiter; Dr. H. H. Skinner presented a paper on congenital goiter. Mr. R. S. Jones, secretary of the public health league, reviewed the work of the league during the past year and plans for future activity.

### MONTANA

#### FERGUS COUNTY MEDICAL SOCIETY

Pres., A. C. Biddle; Secty., E. A. Weldon

A meeting of Fergus County Medical Society was held at Lewistown, May 5, Dr. A. C. Biddle presiding. There were twelve members in attendance.

In addition to the routine business of the society, a report was made as to the speakers who will appear on the program for the annual meeting of the state medical association which will be held at Lewistown in July.

#### MONTANA PUBLIC HEALTH ASSOCIATION

The Montana Public Health Association will hold its annual meeting at Lewistown, July 6 and 7. The following tentative program has been announced. In addition to it, it is hoped some prominent eastern public health men may be present.

President's Address, "Infantile Paralysis." Dr. F. D. Pease, County-City Health Officer, Missoula.

Discussion: Dr. E. F. Ross, County Health Officer, Harlowton; Mr. Leif Fredericks, Agent for Civilian Rehabilitation, Helena.

"A Plan for Cooperation between College Extension Service and Health Officers." Miss Blanche Lee, State Home Demonstration Leader, Bozeman.

Discussion: Dr. Frances Sage Bradley, Acting Director, Child Welfare Division, State Board of Health, Helena; Mrs. Sara E. Morse, Secretary, Montana Tuberculosis Association, Helena.

"Tularemia" (with report of case). Dr. M. C. Pfunder, Miles City.

Discussion: Dr. W. J. Butler, State Veterinarian, Helena.

Symposium on Trachoma:

"Prevention and Treatment." Dr. C. E. Yates, Heart Butte.

Discussion: Dr. Ira D. Nelson, Crow Agency; Dr. W. A. Russell, County Health Officer, Hardin.

Symposium on Goiter Prevention:

Five-minute reports from health officers on problems of goiter within their jurisdictions.

Report of Committee on Prevention of Goiter.

"Scarlet Fever Treatment and Prevention." Dr. E. D. Hitchcock, Great Falls.

"Prevention of Diphtheria." Dr. Arthur Jordan, County-City Health Officer, Helena.

Discussion: Dr. A. M. Treat, County Health Officer, Fairview.

"Montana Birth and Death Rates." Mr. L. L. Benep, Deputy State Registrar, State Board of Health, Helena.

Discussion: Dr. J. B. Freund, City Health Officer, Butte.

"Recent Developments in Our Knowledge of the Ticks in the Spread of Disease." Prof. R. A. Cooley, Bozeman.

Discussion: Dr. R. R. Parker, Hamilton.

"The 'Thus far Shalt Thou Go and No Farther' in Public Health Work." Dr. E. M. Gans, City Health Officer, Judith Gap.

Discussion: Dr. A. T. Lees, City Health Officer, Whitefish.

"Sanitation of Tourist Camps." Mr. H. B. Foote, Director Division of Water and Sewage, State Board of Health, Helena.

Discussion: Dr. S. E. Leard, County Health Officer, Livingston.

"Medicolegal Aspects of Human Blood Types." Dr. John X. Newman, Director Hygienic Laboratory, State Board of Health, Helena.

"The Health Officer's Problems in Small Towns." Dr. T. H. Pleasants, City Health Officer, Lewistown.

"The Spencer-Parker Vaccine for Rocky Mountain Spotted Fever." Dr. R. R. Parker, Assistant State Entomologist, Hamilton.

Subject to be announced. Dr. C. E. K. Vidal, Superintendent Montana Tuberculosis Sanitarium, Galen.

"The Policy of the State Board of Health on the Distribution of Biologicals." Dr. W. F. Cogswell, Secretary State Board of Health, Helena.

## BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

**Personal Hygiene Applied.** By Jesse Feiring Williams, M. D. Professor of Physical Education, Teachers' College, Columbia University, New York City. Second Edition, Revised. 12 mo of 414 pages, illustrated. Philadelphia and London. W. B. Saunders Company, 1925. Cloth, \$2.00 net.

This book, intended for college students and students of sociology, philosophy and education, was

published three years ago, was reprinted five times and is now in its second and revised edition. This speaks strongly for its popularity and success, which its lively style and well-arranged scientific matter account for.

The author attacks current fads and nostrums with praiseworthy zeal and with acumen and facts. The whole subject is approached from the viewpoint of the publicist and teacher of hygiene rather than from that of the clinician. This undoubtedly should obtain but, if any criticism of the book could be made, it would be in wholesale comments on certain diseases in the form of many tables, most of which are quoted from reports of eminent committees. For instance, on page 374 there is a long list of diseases arranged according to their prognosis. Under "Recovery probable but dependent upon patient and treatment" are included measles, erysipelas, mumps, early tuberculosis and diabetes. There is no authority given for this long category and one doubts if it is the result of a personal clinical experience. As a whole the book is very readable, reliable, and well adapted as a popular exposition of the subject.

WINSLOW.

**Fundamentals of Human Physiology.** By R. G. Pearce, B. A., M. D. Formerly Assistant Professor of Physiology, University of Illinois, etc., and J. J. R. Macleod, M. B. D. Sc., F. R. S. Professor of Physiology, University of Toronto, Assisted in Third Edition by Dr. Norman E. Taylor. Third Edition, 349 pp. Cloth, \$3.50. C. V. Mosby Co., St. Louis, 1925.

This is a truly admirable summary of modern knowledge of human physiology. It is not a rehash of old textbook platitudes but just the right emphasis is placed on the important matters. No better work could be used to refresh the mind of the general practitioner and add to his former teachings the most modern information on the subject. It is dedicated to the use of college students but, if any physician should read the account of the physiology of digestion from beginning to end, he would feel well repaid and finish with a real respect for the book. The high character of the authors is easily felt in perusal of this volume.

WINSLOW.

**Intravenous Therapy.** Its Application in the Modern Practice of Medicine. By Walter Forest Dutton, M. D. Medical Director, Polyclinic and Medico-Chirurgical Hospitals, Graduate School of Medicine, University of Pennsylvania. Illustrated with 59 half-tone and line engravings, some in colors. 500 pp. \$5.50. F. A. Davis Company, Philadelphia. 1924.

This volume is very clearly written and quite comprehensively covers the field of intravenous medication. Intravenous treatment of syphilis, the indications of technic, including the spinal Swift-Ellis, and spinal drainage are treated in proportion. The toxemia of pregnancy, tuberculosis, typhoid, uremia, dermatitis, and even trypanosomiasis are embraced in this compact monographic presentation. The book supplies a certain demand for definite instruction in the use of intravenous medication which

is playing a distinctive role in the modern treatment of disease.

SPEIDEL.

**Textbook of Differential Diagnosis of Internal Medicine.** By M. Matthes, M. D. Professor of Medicine and Director of the Medical Clinic, University of Konigsberg. Authorized Translation of Fourth German Edition, with Extensive Additions, by I. W. Held, M. D., and M. H. Gross, M. D., New York City. 175 illustrations. Cloth, 908 pp. \$12.00. P. Blakiston's Son and Co. Philadelphia, 1925.

The reviewer was expecting a great addition to our literature on diagnosis but the more the book is explored the more disappointing it becomes. There is much diffuseness in some matters which are still largely theoretical, as in the matter of functional liver tests, but when one comes right down to practical points in differential diagnosis, of specific diseases there is a most lamentable failure. The translator's paragraphs are very numerous but altogether too verbose. What one wants is a clear, concise, logical presentation, with the emphasis put on the diagnostic points in exact proportion to their value. Osler is still the unique model. In this book style, logic, pith and proportion are all lacking. That prejudice may not obtrude, let us submit a few random passages from the book. In respect to epidemic encephalitis and its differential diagnosis no mention whatever is made of the three diseases with which it is most often confounded, i. e., tuberculous meningitis, acute poliomyelitis and syphilis. Such an omission in a comprehensive treatise of this kind is inexcusable. The matter on heart diseases is very disheartening. Take a brief paragraph on the diagnosis of aortic stenosis, in which there is no word of the thrill. It is as if one were to write an article on angina pectoris and forget to speak of pain. Without a thrill the diagnosis of aortic stenosis would be very doubtful.

Under the caption of goiter heart all the matter refers to the exophthalmic form and the much more common and severe myocarditis of toxic adenoma will be looked for in vain. One of the most glaring shortcomings is in the eleven pages devoted to diseases of the gallbladder and bile ducts, in which eight lines only are given to the subject of chronic cholecystitis, the most common by far of all chronic organic digestive diseases. And under this head only chronic empyema is considered, a rare disease of the gallbladder. Of course one may seek in vain to discover how to distinguish duodenal ulcer from cholecystitis, a most common problem in diagnosis.

And, speaking of this, gastric and duodenal ulcer appear to be wholly confused, for the symptoms given of gastric ulcer, such as pain two to three hours after eating, hunger pain, and relief by food and alkalies, seem to refer rather to duodenal ulcer, especially when it is noted that vomiting is rare. It is notorious that for years the Germans did not recognize duodenal ulcer but for the last decade most Teutonic authorities have adopted the English and American position that duodenal far exceeds gastric ulcer in importance and frequency. So one is not amazed

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in the differential diagnosis of acute appendicitis from diverticulitis to find the chief distinguishing feature is that there is more marked intestinal obstruction in appendicitis. The simple facts that one disease is situated on one side of the body and the other on the other side, and that diverticulitis has been called left-sided appendicitis, are too trivial to note. An impartial review of this work cannot be favorable and it is with deep regret that this statement is made.

WINSLOW.

**Gynecology.** Practical Medicine Series. Edited by Thomas J. Watkins, M. D., F. A. C. S. Professor of Gynecology, Northwestern University Medical School, Chicago, etc.

**Obstetrics.** Edited by Joseph B. De Lee, A. M., M. D., Professor of Obstetrics, Northwestern University Medical School. 534 pp. \$2.00. The Year Book Publishers, Chicago. 1924.

The literature on gynecology reflects for the year stabilization "all along the line." A marked decrease in endocrinologic enthusiasm is seen, with more moderate and probably more just claims for radium and x-ray therapy. Under obstetrics the tendency to conservatism is even more marked. The results obtained by Hillis in 1,000 consecutive cases of abortion with the expectant treatment should merit our attention. De Lee's cryptic comments after each chapter are interesting. This small monograph brings out the latest in obstetrics. This book is a handy reference work for those interested in these subjects.

C. D. SHANNON

**The Physiology of Mind.** An Interpretation Based on Biological, Morphological, Physical and Chemical Considerations. By Francis X. Dercum, M. D., Ph. D., Professor of Nervous and Mental Diseases in the Jefferson Medical College, Philadelphia. Second edition, Reset. 12 mo of 287 pages. Philadelphia and London: W. B. Saunders Company, 1925. Cloth, \$3.50 net.

In this second edition the author has added considerable data. He has condensed a broad field into compass of a small volume and has made it interesting and readable. Following the chapters on physiology of mind, there is also an appendix on Freudism.

WILT.

**Recovery Record for Use in Tuberculosis.** By Gerald B. Webb, M. D. Consulting Physician Cragmor, Glockner and Sunnyrest Sanatoria, etc., Colorado Springs. And Charles T. Ryder, M. D. Cragmor and Glockner Sanatoria, etc. Second Revised Edition. 81 pp. \$2.00. Paul B. Hoeber, Inc. New York. 1925.

This book is intended for the guidance of the tuberculous patient during the convalescent period, when he is usually left largely to his own resources. Many valuable suggestions are found in the chapters dealing with the record, the diagnosis and hygiene of recovery. This injunction is frequently interspersed, "consult your doctor," thus constantly reminding him of the fact that he is still under medical supervision. In the latter part of the book are chart sheets, in number equal to the printed pages, on which the

patient is expected to record his temperature, pulse and other essential facts. Many more or less humorous quotations accompany each chart which, doubtless will help to jolly the patient along toward recovery.

**From Infancy to Childhood.** The child from two to six years. By Richard M. Smith, M. D., Assistant Professor of Child Hygiene at Harvard, etc. 105 pp. The Atlantic Monthly Press. Boston, 1925.

The author states that the transition from infancy to childhood comes between the ages of from two to six years, a period of great mental and physical growth with many perplexing problems. This volume offers many suggestions of value to the parent during this period. Discussing constipation he emphasizes the importance of a fixed time for the stool, with the toilet so constructed that the child's feet can rest upon the floor or movable platform. The child should be required to drink an abundance of water; he should not be amused at meal time with stories or by feeding animals. This is the time for eating and the child should attend strictly to this task. Diet tables are given for each year period from two to five. A wise instruction is to consult the doctor for all serious ailments.

**The Medical Clinics of North America.** (Issued serially, one number every month, Volume VIII, Number IV (Mayo Clinic Number, January, 1925). Octavo of 374 pages with 66 illustrations. Per clinic year (July 1924 to May 1925). Paper \$12.00, Cloth \$16.00. Philadelphia and London: W. B. Saunders Company.

Reports from the Mayo Clinic are always of the first order. In this volume a large number of conditions are considered. Thus, there are six reports of pathology of the intestinal tract, three dealing with kidney disorders and five concerning the circulatory system. Each of these and many others considered are worthy of detailed study. Eusterman reports spontaneous healing of chronic duodenal and chronic gastrojejunal ulcer. Clinical data and other facts establish the correctness of the diagnosis. Hensch reports a series of cases, illustrating the protean manifestations of chronic arthritis, presenting some unusual facts regarding this well-known pathology. Many other conditions common to the practice of every practitioner are presented with valuable suggestions as to treatment.

**The Medical Clinics of North America.** Volume VIII, Number 5, March, 1925. (Boston Number.)

This volume presents an abundance of interesting clinical reports by leading internists of Boston. The following are some of the conditions discussed: Pernicious anemia, hypertrophy of spleen, pulmonary emphysema, diabetes, rheumatism, goiter, gastrointestinal diseases and other important considerations. Splenomegaly in infants and children is discussed by Buckman, illustrated by four clinical cases, amplified by interesting data bearing on each. This is one of the usual interesting volumes of this series.

# NORTHWEST MEDICINE

The Journal of the State Medical Associations of Oregon, Washington, Idaho, Montana  
and Pacific Northwest Medical Association

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No. 7

## ORIGINAL CONTRIBUTIONS

### DIAGNOSIS AND TREATMENT OF TUMORS OF THE SPINAL CORD\*

ALFRED W. ADSON, M.D.

ROCHESTER, MINN.

Section on Neurologic Surgery, Mayo Clinic

Tumors of the spinal cord, meninges and the vertebral column are comparatively rare, but since the epoch-making operation of Sir Victor Horsley, in 1887, neurologists and neurologic surgeons have given them and their treatment a great deal of attention, with the result that an increasing number is recognized early. Thus, a higher percentage of tumors is removed, and consequently more patients recover.

#### HISTORICAL NOTES

The first patient operated on successfully by Sir Victor Horsley was a man, aged forty-two years, who had had intercostal pain for three years. Four months previous to operation, his lower extremities became weak; this progressed to complete paraplegia and anesthesia below the level of the sixth and seventh thoracic roots. Severe chronic spasms in the legs, and paralysis of the bladder and rectum were also present. At operation, a fibromyxoma, situated at the level of the third and fourth thoracic vertebrae, was removed. Improvement was gradual, terminating in cure within one year.

Schlesinger, in his report on 35,000 necropsies

in Das allgemeine Krankenhaus of Vienna, found 135 tumors of the spinal cord during his eighteen years of experience. This number represents 0.38 per cent of the number of necropsies performed, and 2.06 per cent of the total number of tumors found. Ninety-one (67.4 per cent) of the tumors in this series were in the vertebral column, twenty-four (17.7 per cent) arose from the meninges or the roots, and twenty (14.8 per cent) were within the cord itself. There were sixteen vertebral tumors which did not involve the vertebral canal.

Frazier, in 1918, reported, under the incidence of tumors, a review of 330 cases in which operation had been performed. One hundred fifty-two of this series arose from the meninges; fifty-eight were vertebral in origin, thirty-six intramedullary, thirty caudal, and in fifty-four instances the origin was not stated. Elsberg, in 1920, reported a series of 105 laminectomies, in sixty-seven of which tumors of the cord were found; forty-nine (75 per cent) of the tumors were extramedullary; eighteen (25 per cent) were intramedullary. Seven of the forty-nine were situated extradurally, and forty-two intradurally.

Sargent, in 1920, reported a group of twenty-seven cases; in fifteen of these the tumor was extramedullary but intrathecal. Fourteen of the fifteen proved to be benign; the other was a fibrosarcoma. The twelve remaining cases of this group were classified as malignant, with unsatisfactory operative results. Of these tumors twenty-six (13.7 per cent) were situated extradurally, producing pressure symp-

\* Read before Seattle Surgical Society, Seattle, Wash., Jan. 8, 1925.

toms on the cord; sixty-two (32.8 per cent) were meningeal, situated intradurally and producing direct pressure on the cord but not invading it; forty-eight (25.4 per cent) were within the cord and intramedullary; in thirty-five (18.5 per cent) no tumor was found at operation, the lesion being chronic meningomyelitis, but later four of the patients were found to have tumors. The percentage in this series is rather high, but since the review includes the earlier work, it represents a much higher percentage than would a later series.

During the year ending October 1, 1924, thirty-eight cases were operated on, in only three of which no tumor could be found. In eighteen (9.5 per cent) of the 189 cases, a variety of lesions were found within the vertebral canal, which produced pressure on the spinal cord, but these could not be classified as true tumors of the cord. Four were angiomas or varicose veins of the spinal cord; one was an echinococcus cyst, a part of an extensive lesion of the lung and liver; two were tuberculous lesions of the cord; two were inflammatory masses due to syphilitic infection, in all probability gummas of the cord and meninges; two were cerebellar tumors with spinal projection, and seven were hypertrophic osteitis of either the laminae, the transverse processes, or the bodies, which resulted in a narrowing of the spinal canal and produced pressure on the spinal cord. Metastatic lesions of the spine were not included in the series; these are fairly well ruled out in view of the history of a primary malignancy, and the positive x-ray findings, which are so easily demonstrated. Malignant lesions with erosion of the body of the vertebra are not surgical tumors.

#### ETIOLOGY

The specific cause of tumors of the spinal cord is still unknown. No doubt the same factors that cause tumors to develop in other parts of the body cause tumors to develop in the spinal cord, meninges and spinal column. Tumors of the spinal cord are prone to develop during the third, fourth and fifth decades of life, but may develop earlier or later. It is very doubtful whether trauma is a predisposing factor. However, according to Mills, trauma may produce osteoma, fibroma, or sarcoma, and in two specific instances of this series trauma was instrumental in the development of a fibrochondroma; it is likely, also, to have been the cause of the hypertrophic osteitis reported in seven of the cases which produced a narrowing of the spinal canal, and consequent pressure on the cord and paralysis. Bruns has reported a case of primary sarcoma of the

prostate which metastasized to the lower thoracic vertebrae after a fall on the back. Metastatic tumors may develop as a result of trauma, but it is very doubtful whether trauma plays a part in the development of tumors of the spinal cord or meninges; however, it does give rise to osteomas, fibrochondromas and so forth, which in turn may become malignant.

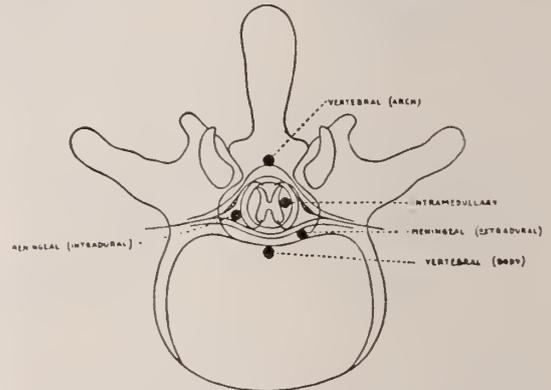


Fig. 1. Sketch showing the various points of origin of tumors of the spinal cord, membranes and vertebral column (horizontal plane). (After Frazier.)

#### PATHOLOGY

Tumors of the spinal cord may arise from the body, the laminae, or the transverse processes of the vertebrae, or from the ligaments, or the intervertebral discs (fig. 1). Those affecting the body of the vertebrae are likely to be malignant metastatic tumors (a type which is not included in this series); those affecting the laminae and the transverse processes are likely to be osteomas and osteosarcomas; those arising from the ligaments, fibromas and fibrosarcomas, and those arising from the intervertebral discs, fibrochondromas (fig. 2). Extradural tumors may also arise from the external surface of the dura, or lipomas may develop from the extradural fat, or neurofibromas from the spinal nerve.

In another article I have given a detailed report of my experience with neurofibromas of the spinal nerves. These were dumb-bell in shape, with a portion of the growth within the dural canal, the outer portion causing erosion of the vertebrae. In some of the cases there was extension into the muscles of the neck; in one case there was extension to the chest; in all, there was pressure on the spinal cord and paralysis. Subdural, but extramedullary, tumors were found to arise from the dura, from the arachnoid, from the pia mater, from the spinal roots, or from the blood vessels covering the cord; this type was the most numerous. The tumors are generally benign, definitely encapsulated, not meta-

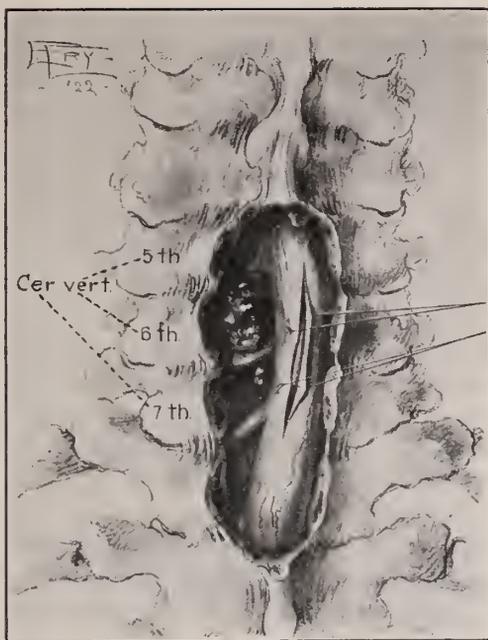


Fig. 2. Extradural fibrochondroma of the fifth cervical intervertebral disc.

static, and are amenable to surgical removal; pathologically, they are usually fibromas, endotheliomas, myxomas, psammomas, neurofibromas, and angiomas; occasionally malignancy is found (fig. 3).

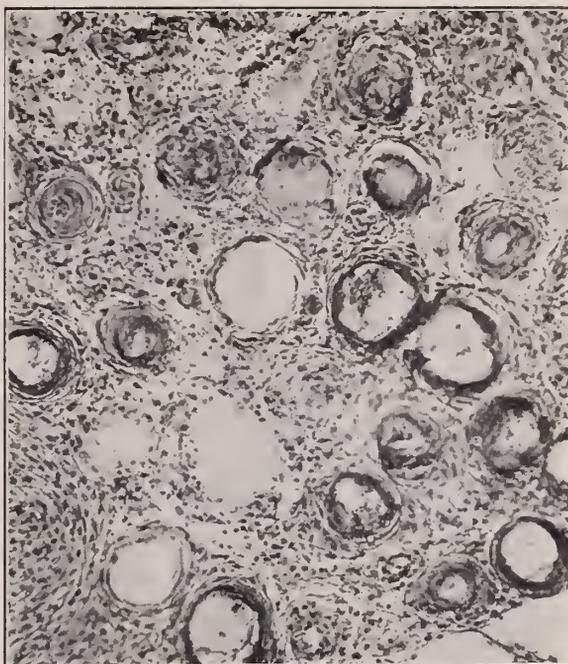


Fig. 6. Photomicrograph of psammoma shown in figs. 3 and 5.

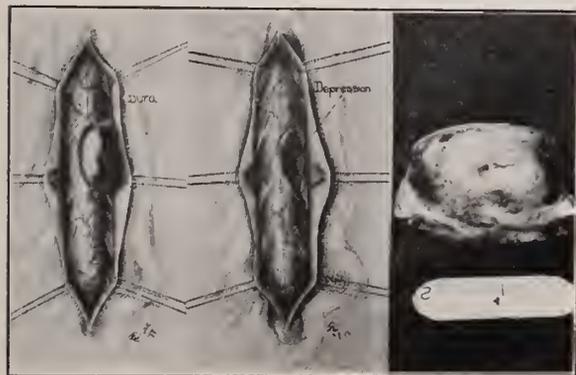


Fig. 3. Subdural extramedullary psammoma on the right dorsolateral aspect of the dorsal cord.  
 Fig. 4. Depression of the cord produced by the psammoma shown in fig. 3, which compressed the cord to about three-fourths normal size. The patient recovered completely in a year.  
 Fig. 5. Psammoma shown in fig. 3 after removal.

Intramedullary tumors are, as a rule, of glial origin, and simulate the various types of gliomas in the brain; that is, the lesions were so extensive and infiltrating, without a line of demarcation, that removal was impracticable. Occasionally a tuberculoma, a gumma, or an echinococcus cyst is found within the spinal cord, producing pressure on the spinal cord. I have also observed several cerebellar tumors extending through the foramen magnum, and producing pressure on the cervical cord.



Fig. 7. High cervical tumor producing complete quadriplegia. The patient recovered after removal.

Transverse level symptoms may arise as the result of hypertrophic osteitis, producing a narrowing of the spinal canal and consequently pressure on the cord (figs. 7, 8 and 9).

Nonmalignant tumors of the spinal cord and meninges develop gradually, and may not cause serious symptoms for years. The soft oval or elon-

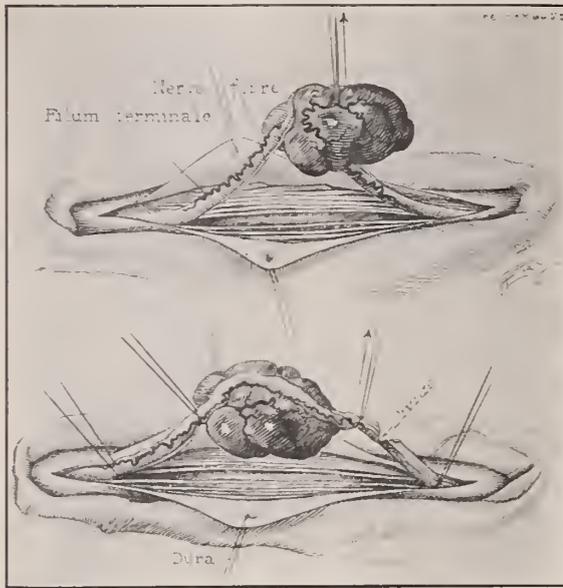


Fig. 8. Ependymal cell glioma of the filum terminale producing pain similar to sciatica without sensory or motor disturbance. The patient recovered after operation.

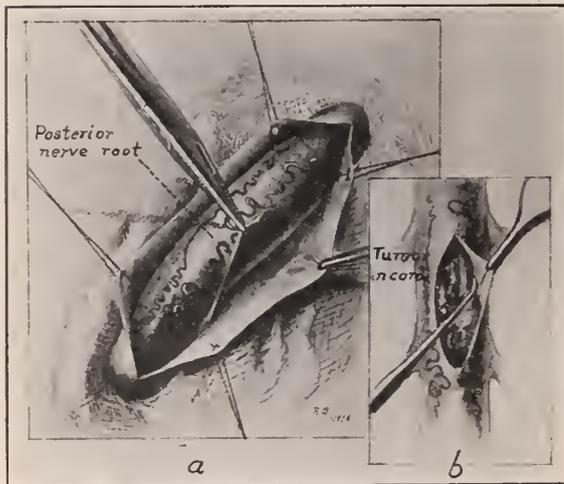


Fig. 9. a. Intramedullary glioma of the spinal cord. b. Collapse of the cord following dorsal split and partial removal of intramedullary glioma.

gated tumor may produce only mild sensory and motor disturbances with an indefinite level syndrome, while the round, hard, meningeal tumor may produce complete paralysis within two to six months from the manifestation of the initial symptom. Compression of the cord from one-third to one-half normal size, with complete loss of motor and sensory function below that level, has been known to be so relieved by surgical treatment that return of function was complete in a similar period, indicating that the tumor had caused a physiologic block rather than actual destruction of the cord. The duration and the degree of the paralysis are important factors in determining the extent of injury

to the spinal cord; patients with marked paralysis of short duration will recover following the removal of the tumor, while patients with moderate paralysis of long duration fail to recover, even though the tumor is removed surgically.

#### SYMPTOMS

Tumors of the vertebral column may exist for some time without producing symptoms, but those arising from the spinal cord or from the meninges soon give evidence of their presence. Frazier refers to these symptoms as developing in three cycles: the first, the root cycle; the second, manifested by a Brown-Sequard syndrome; and the third, characterized by weakness and paralysis.

The first cycle, referred to as the longest, is the period of the disease in which it is frequently unrecognized, and it is not uncommon for patients suffering from root pain to present themselves for examination complaining of rheumatism, neuritis and abdominal disorders; it is equally common for physicians and surgeons to attempt to treat these complaints without making a thorough neurologic examination. The pain associated with the tumors is due, primarily, to involvement of, or traction on, the dorsal roots, but as the disease progresses it is the result of pressure on, or involvement of, the anterolateral tract of the spinal cord; when the latter is affected, there are symptoms of anesthesia and motor disturbance.

The irritative symptoms, besides pain, are paresthesia, hyperesthesia, anesthesia, tremor, muscular spasm, spasticity, muscular atrophy, paresis of all muscles of the segments involved, as well as those below, and loss of bladder and rectal control. The pain associated with subdural but extramedullary tumors is exaggerated by talking, sneezing, bending forward and lying down, and often progresses to such severity that the patient is unable to lie down, and is compelled to walk or attempt to sleep in a chair. When this pain affects the sciatic nerve, it is not relieved by the usual treatment for sciatica; it differs from sciatica in that it is more or less continuous, and not intermittent like sciatica neuralgia. The pain may exist for years without marked sensory, motor, bladder or rectal disturbance, which is explained, at exploration, by the presence of an oval or rounded valve-like tumor, usually arising from, or attached to the meninges, to the filum terminale, or arising from a single sensory root. As the patient coughs, sneezes or strains, cerebrospinal fluid is forced down the spinal canal, which in turn produces pressure on the tumor and traction on the sensory root.

The second cycle differs from the first in that in the first the symptoms are of irritation, while in the second, they are of pressure, manifested by the Brown-Sequard syndrome. Oppenheim asserts that he has known of only one case of extramedullary tumor, in which paralysis developed without being preceded by the Brown-Sequard syndrome; the latter consists of paralysis of motion on deep sensation on the side on which the tumor is located, with impairment and loss of pain and temperature sensibilities on the opposite side, below the level of the tumor.

It has been noted in a series of cases observed at the Mayo Clinic that during the developmental stage of the tumor the Brown-Sequard syndrome will occur; however, since patients present themselves for examination in the varying stages of the disease, many complain only of pain and tactile, or motor impairment, but as a rule, the Brown-Sequard phenomenon develops during this cycle before complete paralysis occurs.

The third cycle is characterized by loss of pain, tactile and temperature sensations, or by weakness and paralysis of motor power, associated with loss of bladder and rectal control, with exaggeration and finally loss of all reflexes whose arcs are involved, and exaggeration of the reflexes of the segments below the level. Vasomotor and trophic disturbances in the form of edema and decubitus ulcers are the last to develop.

It is rather difficult to draw a sharp line between the three cycles of symptoms incident to tumors of the spinal cord. While the principal object of the examination is to reach a correct diagnosis, the neurologist should be acquainted with the various phases of the development of the disease, since patients will be seen with tumors in these various stages. Differentiation of the various types of tumors of the spinal cord is not always possible, although highly desirable.

It is generally conceded that extramedullary tumors are more frequently associated with pain than are intramedullary tumors, but in my series this fact is not always borne out. It is true, that if the ball-valve syndrome, that is, pain on coughing and sneezing, is present, there is a strong possibility of the tumor being extramedullary; if bladder and rectal involvement appear late in the syndrome, there is likewise a strong possibility of the tumor being extramedullary, while if the involvement occurs early, the tumor is generally intramedullary. Also, the Brown-Sequard syndrome is usually asso-

ciated with extramedullary tumors, rarely with intramedullary ones. It is important that a differential diagnosis should be made, inasmuch as extramedullary tumors are amenable to surgical treatment, while intramedullary tumors are practically nonsurgical. The use of lipiodol may serve as further aid in the differentiation.

Two hundred laminectomies on 189 patients were performed at the Mayo Clinic from 1910 to September 1, 1924. In this series of cases a positive or a tentative diagnosis of spinal tumor had been made. One hundred seven of the patients were males, and eighty-two were females, the average age being thirty-three years. The oldest patient in the series was aged sixty-five years, the youngest twelve. A two-stage operation was performed on nine patients, and a three-stage operation on one, on account of the extensiveness of the lesion. The average duration of symptoms prior to examination, in patients with extradural tumors, was thirteen and three-tenths months; in those with intradural but extramedullary tumors, twenty-five and one-half months, and in those with intramedullary, forty-five and six-tenths months. The shortest history was of one month, and the longest of nineteen years. Root pain was present in eighteen (69 per cent) of twenty-six patients with extradural tumors, in fifty (80 per cent) of sixty-two patients with intradural but extramedullary tumors, and in thirty-six (75 per cent) of forty-eight patients with intramedullary tumors.

In an attempt to represent the symptoms graphically, the patients have been grouped according to the degree of involvement: complete paralysis, partial paralysis and no paralysis. In the twenty-six cases of extradural tumors, motor disturbance was absent in three, partial in eight, and complete in fifteen; there was no sensory change in two, partial sensory disturbance in nine, and complete sensory level in fifteen. Bladder and rectal disturbance was absent in eight; there was slight impairment in nine, and complete loss of control in nine.

In the sixty-two cases of intradural but extramedullary tumors, motor paralysis was absent in eight, partial in thirty-four, and complete in twenty; there was no sensory change in six; there was partial loss in twenty-eight, and it was complete in twenty-eight.

Bladder disturbance was absent in seventeen, partial in twenty-eight, and complete in seventeen; rectal disturbance was absent in eighteen, partial in twenty-nine, and complete in fifteen.

The forty-eight patients with intramedullary tumors all presented either motor or sensory loss; in thirty-three the motor loss was only partial, and in fifteen it was complete. Thirty-one of the patients complained of partial sensory disturbance, seventeen of complete loss below the segment involved; fourteen were free from bladder disturbance; twenty-three had partial, and eleven had complete bladder disturbance; twelve had no rectal disturbance, twelve had partial, and sixteen had complete rectal disturbance.

In the thirty-five patients without tumors, but in whom lesions proved to be chronic meningomyelitis, or an unlocalized or unrecognized tumor, only one was free from motor symptoms; twenty-seven had partial motor involvement, and eleven had complete involvement. One patient was free from sensory disturbance, twenty-three had partial, and eleven complete sensory paralysis below the level involved; seven were free from bladder involvement; twenty-four had partial disturbance, and four had complete loss of function; seven were free from rectal disturbance; twenty-two had partial, and six complete loss of control. As a rule, the reflexes were increased below the level of the lesion.

The paralysis in the remaining eighteen cases of miscellaneous lesions will not be reviewed, since the groups are too small to permit definite conclusions. Spinal puncture was performed in 151 of the series of 189 cases. Dry taps were found in twelve, due to a lumbar tumor or to a tumor just above the site of the spinal puncture. Xanthochromia, yellow cerebrospinal fluid, which coagulated on standing, or Froin's syndrome, was present in thirty cases. Nonne, or increased globulin test, was positive in eighty-four, with an average cell count of 5.5.

Besides the 154 patients in whom a tumor was found at the time of operation, four were subsequently found to have tumors; thus, lesions were verified in 158 cases. Thirty-eight tumors were located in the cervical region, or in the cervicodorsal or cervicooccipital, the chief portion of the tumor being in the cervical region; ninety-three were situated in the dorsal area, twenty-one in the lumbar, and six in the sacral.

A review of these cases demonstrated that root pain is an early and important symptom, but that it is not always present. It is further evident that complete paralysis of motor and sensory function is not necessary to make a diagnosis, but there is no single laboratory method on which a diagnosis can be made, but the presence of xanthochromia,

with a suggestive history, is a diagnostic aid. The history is perhaps the most valuable factor in examination, but since it presents, in chronologic order, first the symptoms of irritation, then of slight pressure, and then of complete paralysis, which are so characteristic of spinal cord.

#### COMPLICATIONS

The most serious complication in cases of tumor of the spinal cord, with paralysis, is the loss of urinary control with resultant urinary residue, cystitis, pyelitis and pyelonephritis. If the bladder is not catheterized, and is permitted to overflow, automatic control will be established, so that the bladder will empty once every two or three hours, and insure fair comfort. The patient will learn that by massaging the abdominal wall over the bladder, reflex action can be produced which will cause the bladder to empty, and avoid dribbling and a constant overflow. When once the bladder has been catheterized, cystitis usually develops and it is much better to insert a retention catheter, which permits constant drainage until function returns rather than to institute daily catheterizations. The catheter should be changed every five or seven days, and acid sodium phosphate and urotropin in equal doses of from 5 to 10 gr. administered three times a day for periods of ten days. In the presence of cystitis, daily irrigation with 2 per cent boric acid solution, followed by injection of 10 c.c. of 20 per cent argyrol, 10 per cent protargyrol, or 1 per cent silver nitrate, is of additional antiseptic value. Should pyelitis or pyelonephritis develop, the administration of mercurochrome intravenously, 20 c.c. in 1 per cent distilled sterile water, has proved of value. The solution should be allowed to stand two hours before using.

With incontinence of the bladder, there is likely to be paresis of the lower colon and of the sigmoid, and special precautions must be taken to prevent fecal impactions. Mineral oil in half ounce doses from one to three times a day, with daily enemas, has been used routinely; occasionally other purgatives and laxatives are necessary.

Sexual weaknesses and impotency are also associated with disturbances of the bladder and rectum, and there will be no improvement until the neoplasm has been removed and function restored. Decubitus ulcers are rare, except when the lesion becomes extensive and produces complete paralysis below the segment involved; pressure over the decubitus ulcer should then be avoided, and a mild antiseptic applied, besides dry heat for periods of from thirty minutes to three hours a day.

## DIAGNOSIS

Tumors of the spinal cord must be differentiated from myelitis, sclerosis, chronic meningomyelitis, and syphilitic affections of the spinal meninges and of the cord. This can be done most successfully by careful development of the history and a thorough neurologic and laboratory examination.

Myelitis may be acute or chronic. Acute myelitis is rapid in its course, and produces a level with complete loss of function below the segment involved, without spinal block, but with probable increase in the globulin content of the spinal fluid and an increased cell count. Both acute and chronic myelitis are due to some form of infection. The various scleroses present a slower onset of symptoms and may be distinguished from tumors of the spinal cord in that the basis of the lesions is usually multiple in the former, is less sharply defined, and rarely produces transverse level signs.

Chronic meningomyelitis is the term applied to a spinal lesion producing symptoms similar to tumor of the spinal cord. The disease, which is probably of infectious origin, is slow in onset, and produces a transverse level which is not so definitely defined in cases of cord tumor, but which is suggestive enough to warrant exploration of the cord to rule out tumor, if its absence cannot be demonstrated by means of laboratory tests.

Occasionally there is a localized syphilitic lesion of the meninges or cord, and I have explored two such cases. One patient (C. C. Case A 210045) presented a history of syphilis besides symptoms of a transverse lesion of the cord. Laminectomy revealed a cicatricial mass, into which were matted the cord, meninges and the surrounding tissues. The other patient (H. L. Case A 363589) presented a similar history with similar findings, only the mass, in this case, had not become cicatrized, and it was possible, at operation, to reflect the dura and remove some of the gelatinous inflammatory tissue, liberating the cord. The first patient did not improve, while the second recovered slowly, and at present is perfectly normal.

Laboratory studies are of value, and a comprehensive examination of the spinal fluid should be made. The Froin syndrome, or the presence of xanthochromia in the spinal fluid, which gives it a yellow color, is of significance, since it is frequently below the tumor, especially if the arachnoid canal is entirely blocked. However, xanthochromia may be present also in certain inflammatory lesions of the cord, and it has been reported by Cushing and Ayer to have been present above the tumor in

the cerebrospinal fluid. The Nonne test of the increased globulin is usually positive in the presence of tumor of the spinal cord, especially if the arachnoid canal is blocked. Occasionally the cell count is increased, but as a rule, it is not.

The most important clinical test is the Queckenstedt, which indicates a block in the spinal fluid within the arachnoid canal. This test is made by inserting a spinal puncture needle into the spinal cord through the fourth lumbar space which in turn is connected with a graduated cylinder of 1.5 bore; this permits the cerebrospinal fluid to seek its normal pressure level, which is approximately 12 cm. Both jugulars are then compressed, and if there is no block within the spinal cord, the cerebrospinal fluid will rise quickly to a level of 15 or 18 cm., dropping suddenly when the pressure on the internal jugulars is released. If there is a block in the spinal canal, there will be no rise on compression of the jugulars, and no drop when the pressure is released; if there is a partial block, the rise in the manometer will be slow, and not so high as when there is no block, and the drop will in turn be gradual. The only problem confronting the operator is the determination of the probable cause of the block, since adhesions from meningitis may produce block or partial block similar to that of the tumor. Ayer has called attention to the value of combined cistern and lumbar puncture in the determination of spinal block, as in this way not only the information obtained by the Queckenstedt method is secured, but additional diagnostic data by the observation of a sudden rise in the manometer connected with the cistern puncture, and no rise or a slow rise with the lumbar puncture. He attempts to localize the lesion by removing the needle from the posterior cistern and reinserting it at different levels in the dorsal or lumbar area until the location of the block is found. This particular step is of value in localizing the tumor when no definite localizing symptoms are present, but it must be employed with caution to avoid injury to the spinal cord.

Occasionally tumors of the spinal cord present symptoms without any evidence of block, particularly at the onset of small subdural lesions and intramedullary lesions. Sicard's lipiodol method is used with considerable success; it consists of injecting lipiodol, iodinated oil, into the subarachnoid space, causing a shadow to be cast on the roentgen plate, which in the presence of block produces a circumscribed outline of the upper or the lower margin of the neoplasm, depending on whether the lipiodol was injected above or below the tumor.

Dandy's pneumography is also of value, since by it the spinal fluid can be removed from below the tumor, and air be substituted in its stead, which in turn throws a dark shadow in the spinal canal up to the lower border of the tumor.

#### PROGNOSIS

The prognosis in cases of tumor of the spinal cord depends on the type of the tumor, and on the duration and degree of paralysis. Hard, rounded tumors produce greater paralysis, with greater damage to the cord, than do soft, elongated tumors; however, recovery may be expected in cases in which the paralysis is not complete, or, if complete, is of short duration, not exceeding from six to nine months. While there is relief from pain in cases in which there is a longer history of paralysis, the return of motor and sensory function is usually incomplete, if the paralysis has existed for more than one year; in short, return to normal function can be expected only in cases in which the paralysis has lasted less than one year.

A review of the Mayo Clinic series show that the tumor was removed completely in eighteen of the twenty-six extradural cases; in seven, partial removal only was possible; in one, exploration only was made. In the sixty-two cases of intradural but extramedullary tumors, the tumor was removed completely in fifty-nine, partially in two, and explored in one. Of the forty-eight cases of intramedullary tumors, the tumor was removed completely in three, partially in twenty-three, and in twenty-two exploration only was made.

Of the thirty-five patients in whom no tumor was found at operation, and in whom only an exploratory laminectomy was performed, four proved later to have tumors, two were found to have tumors at subsequent operation elsewhere, and two at necropsy.

In the miscellaneous group of eighteen patients, four were found to have angioma or such an extensive varicosity that actual pressure was produced. Of these one has become perfectly well as the result of the laminectomy and radium treatment; one has improved and is doing light work; one has improved, but is not working, and the other has not improved. One patient had an echinococcus cyst with an extension into the canal; cure followed removal. Two patients had tuberculoma; one did not improve; the other died. Two had syphiloma; one recovered, the other died two years later. The two patients with cerebrospinal tumor died following operation. Seven patients presented symptoms

of spinal pressure as the result of a hypertrophic osteitis and of the laminae or body; of these, three have been completely relieved from symptoms; one has improved; two have not improved, and one has been operated on too recently to determine results.

In summarizing the results, it is found that out of a series of 189 patients operated on during a period of fourteen years because of a positive or tentative diagnosis of cord tumor, definite pathology or a neoplasm was found in 154 (81 per cent). In eighty-eight (57 per cent) of the 154 patients, the tumor was removed completely, and in thirty-five (22 per cent) it was partially removed. Of this group of patients, 138 are living at the present time; sixty-four (42 per cent) have recovered completely and are working; eleven (7 per cent) have improved sufficiently to do light work; twenty-seven (18 per cent) have improved, but are not able to carry on their regular duties; six improved for a time, but later had a recurrence of symptoms; fifteen are helpless; three have been operated on too recently to determine results, and twelve of the patients have not replied to recent inquiries concerning their condition. Hence, 102 (67 per cent) of the series of 154 patients, in whom neoplasms were found, have either completely or partially recovered; this figure represents improvement in 54 per cent of the total series of 189 patients on whom a laminectomy was performed.

The statistics substantiate not only the fact that neoplasms of the spinal cord are removable, but also the fact that complete recoveries, following operative procedure, take place. At present, the mortality following operations in cases of tumor of the spinal cord is 7 per cent; including the operations performed during the earlier years when less attention was given to bladder complications, the mortality averaged as high as 10 per cent, and 15 per cent in certain groups. However, with the use of paravertebral anesthesia and careful drainage of infected bladders, the surgical mortality has been reduced. In cases of intramedullary tumors the ultimate prognosis is necessarily unfavorable, since sooner or later the patient will develop septicemia from decubitus ulcers, or pyelonephritis, which results in fatality.

#### TREATMENT

Surgical removal is the only proper treatment for benign tumors of the spinal cord. Radium treatment may be of slight palliative value for malignant lesions or angiomas, but too much should not be expected. Intramedullary tumors are the most dif-

difficult to treat, since they do not permit reaction, most of them being extensive, infiltrating gliomas. The procedure usually carried out in their treatment is splitting of the cord dorsally, permitting the tumor to extrude spontaneously. Usually this brings about temporary improvement, and in an occasional case permanent improvement may result. It is unwise to attempt removal of an angioma, since decompression in conjunction with the use of intensive radiotherapy is probably the most effective form of treatment. Ependymal cell glioma in the filum terminale can be resected, provided there has not been an erosion through the spinal canal into the soft tissues.

## SUMMARY

The occurrence of tumors of the spinal cord is much more frequent than is generally believed. It is the task of the neurologist and the neurologic surgeons to recognize these lesions before complete paralysis has taken place, and to afford the patient the benefit of an exploration and removal of the growth before the disease has progressed to the extent of making of him a permanent invalid.

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## CHEST SURGERY

A REVIEW OF ITS PRESENT STATUS\*

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Chest surgery dates back to the days of Hippocrates who described empyema and its treatment. It is possible that the Chinese and Egyptians, previous to the days of Hippocrates, had drained empyema necessitates, but there is, however, no direct record in the literature of their work.

Hippocrates evidently understood the disease fairly well for he described it as a malady accompanied by high fever, cough, pain in the chest and distress when the patient lies on the well side. The treatment was to open with a knife or cautery. If there was a swelling, this point was selected as the place for opening, but if there was no swelling, the opening was made by the side of the ninth rib posterior to the midaxillary line. Hippocrates did not completely evacuate the chest at the time of opening, but closed the wound after some pus had been discharged and then each day the wound was opened and pus evacuated. On the tenth day he began the injection of oil and warm wine. After the discharge had become clear, he inserted a hollow metal tube drain. Much that Hippocrates wrote regarding empyema remains among the accepted facts today. In fact, for many centuries, chest surgery made but little advance. In the years preceding the World War, there was an increasing interest in this subject, but the profession as a whole was doing little more in chest surgery than Hippocrates.

In this paper it will be impossible to deal with all the various aspects of chest surgery, hence I shall discuss only some of the more important features, going into some detail with those conditions which the men in general practice treat for themselves and referring briefly to those which will need to be recognized, so that the patient may be referred to a chest surgeon for such work before it is too late to secure relief.

*Empyema.* As a result of the influenza epidemic we have learned that empyema must not be treated as a single entity, but each case instead must be carefully studied and classified before outlining treatment. For general purposes empyema may be

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classified as acute, chronic and tuberculous. Acute empyema must again be classified as to its etiology, since the empyemas produced by different organisms require different treatment. Thus, while the time-honored method of Hippocrates is effective in a large portion of the empyemas, it is very frequently followed by death in the streptococcic infection. A practical classification of empyema from the standpoint of treatment is according to the general etiology.

1. Empyema accompanying influenza usually due to the streptococcus hemolyticus.
2. Empyema accompanying pneumonia.
3. Metastatic empyema.
4. Empyema by direct extension.
5. Empyema from penetrating wounds.

Graham has laid down the following principles to be followed in the treatment of empyema. First, the avoidance of an open pneumothorax in the acute stage of lung involvement; second, the early sterilization and obliteration of the cavity; and, third, the maintenance of the nutrition of the patient.

Empyema associated with influenza usually begins with an acute accumulation of thin serous serosanguinous fluid. The pleura is congested and the lung lies free with little or no attempt at formation of adhesions. The organism is usually a streptococcus and often of the hemolytic variety. The empyema develops at a time when the patient is in a more or less serious condition. The opening of the chest for drainage at this time permits the development of a pneumothorax, is accompanied by more or less shock even when done under local anesthetic and seems to increase the hemolytic activity of the organism.

*Pneumothorax.* Graham in his experimental work has shown that the mediastinum is not rigid, but when pneumothorax develops on one side, there is pressure across the center through the mediastinum, decreasing the capacity of the other side of the chest. The vital capacity of these patients is already greatly reduced as a result of the disease. In such a case, if the chest is to be opened, a pneumothorax must of necessity result. The lung on the affected side collapses as there are usually no adhesions present and, because of the pressure across the midline, the capacity of the lung on the opposite side is decreased. The vital capacity of these patients is but little greater than the tidal air, so that the production of a pneumothorax may reduce the vital capacity below the tidal air volume previous

to the operation. This is undoubtedly a frequent cause of death.

*Shock.* While under ordinary conditions there is not much shock in a simple thoracotomy under local anesthesia, when the patient is seriously ill with influenza and having respiration further hampered by an accumulation of fluid, the shock becomes of much greater import, so it may be an outstanding factor in producing death.

*Increased hemolysis.* A search of the literature fails to throw any scientific proof that there is an increase in the hemolytic action on the part of the infection, although it has been the observation in many of these cases that there is seemingly an apparent increase.

These factors absolutely contraindicate a thoracotomy during the acute stage of an influenza complicated by an empyema. However, the constant increasing pressure due to the increased fluid must be relieved. This can be accomplished by careful aspiration which may be repeated from time to time as indicated, until the condition has either cleared up as sometimes happens, or the patient's condition is improved so that a thoracotomy can be safely done. In aspirating it must be remembered that air can enter through a needle as well as through an incision in the chest wall, consequently the needle must be kept closed at all times, and must be of such caliber that an opening will not be left in the chest wall through which air can be aspirated after the withdrawal of the needle. In patients having an extensive amount of fluid the entire amount should not be withdrawn at one time. In aspirating it is well to use the Potain aspirator or some similar device, by which a steady flow may be maintained. Following the removal of the needle, the opening may be closed with collodion, but if this is done it should be watched, as occasionally there will be an infection in the chest wall by organisms left as the needle is withdrawn.

*Empyema accompanying pneumonia.* Empyema accompanying pneumonia is produced either by the pneumococcus or staphylococcus as a rule, but sometimes by the streptococcus. The same careful study of the patient's general condition should be made before deciding on the treatment, as with a patient with empyema complicating influenza. The reason that thoracotomy has given better results in the empyema following pneumonia than that following influenza is that empyema developed later in pneumonia or is not recognized until later. In the pa-

tients who are acutely ill because of lung involvement, the opening of the chest would carry with it great hazard, providing the lung had not become adherent to the chest wall. Fortunately for a large number of patients this occurs early, so that in opening the pleura there is not a complete collapse of the lungs and filling of the chest with air. This is the reason why the empyemas with pneumonia have done so well. However, it must be borne in mind that this is not always the case and it must be further borne in mind that the shock accompanying the rib resection may be the last straw that will determine the fatal outcome of the lesion.

In cases of empyema developing early in pneumonia, aspiration should be the procedure and not thoracotomy, but late in the disease, after the patient's lung has begun to resolve, drainage is indicated. In the early cases as in the early cases with influenza, aspiration may need to be repeated but it is better to aspirate a chest repeatedly until the patient's condition is such that a thoracotomy can be performed safely, than to run the risk of death.

The treatment of empyema due to a metastatic infection, by direct extension or by introduction through a penetrating wound from without, depends entirely upon the patient's condition. If this is at all precarious, aspiration should be done at first, and then later when the patient's condition warrants it, thoracotomy under the same precaution used in the empyemas of influenza or pneumonia should be done. In penetrating wounds, infected foreign bodies should be removed immediately if possible. If still present after the empyema has developed, they should be removed as soon as the patient's condition will warrant it.

*Chest drainage.* Much was learned during the influenza epidemic about chest drainage. Formerly the usual method followed was to make a wide opening, put in a drain to insure that it would not close and trust to nature to do the rest. This method, as pointed out by Graham, is accompanied by great danger. It has been our experience, which is limited as compared to that of those who treated empyema in the military hospitals in the late war, that if early attention is given to the expansion of the lungs, healing is just as rapid without irrigation as with it, so with this in mind we have divided Graham's principles into four heads in place of three.

1. Open pneumothorax must be avoided.

2. The lung must be made to expand early so that it does not become fixed and thus produce a cavity.

3. In cases that do not clear up readily, irrigation may be used.

4. Maintain the nutrition of the patient.

*Prevention of an open pneumothorax.* There are two ways of draining the chest. First, by the insertion of a rubber tube through a canula that has been inserted between the ribs, the tube being immediately connected with a closed drainage system, and, second, by the classical rib resection, removing, however, but a small portion of rib and then inserting a Brewer tube (fig. 1) which is

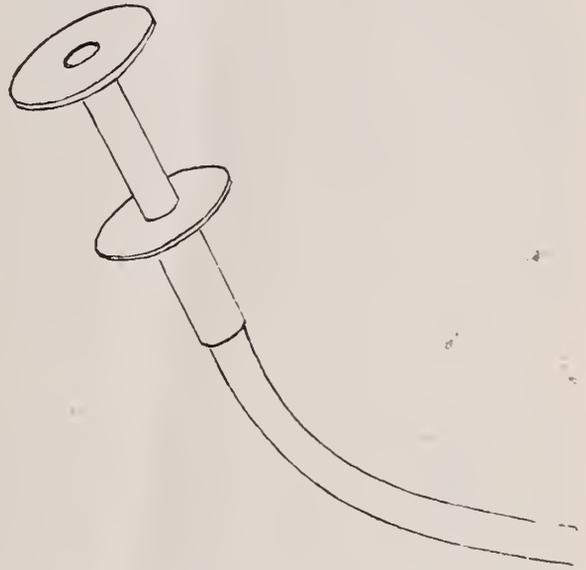


FIG. 1. The chest wall is compressed between the flanges, securing a fairly tight wound.

connected with a closed drainage apparatus. During the war much work was done upon the use of negative pressure for the purpose of aspirating the contents of the pleural cavity. It is still followed by some. However, we believe that the same results are obtained by carrying the drainage tube down the side of the bed into a bottle containing water in such manner that the end of the tube is always immersed (fig. 2). In this way, when the patient exhales, the fluid in the chest is forced out. When the patient inhales, it is impossible for air to enter the tube because it is immersed below the water and a limited negative pressure develops. In order to have this system work properly, the nurse must be carefully instructed not to empty the bottle without previously having clamped the tube or otherwise air will enter the chest through the tube.

*Securing expansion of the lungs.* Blowing into a bottle has long been used as a method of securing lung expansion. This method necessitates the frequent filling of the bottle. Dr. Irvine, when associated with me some few years ago, devolved an ingenious method of causing the bottle to be refilled through a syphon and at the same time giving the patient a measure by which he could determine the effectiveness of his efforts. This method required

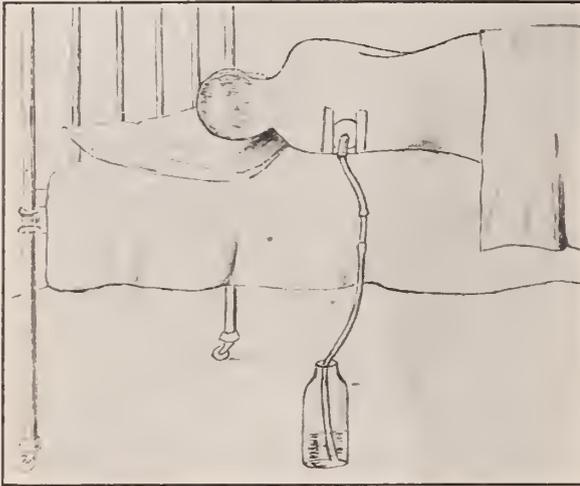


Fig. 2. End of tube must be kept under water in order to maintain a closed system. When the bottle is emptied the tube must be clamped.

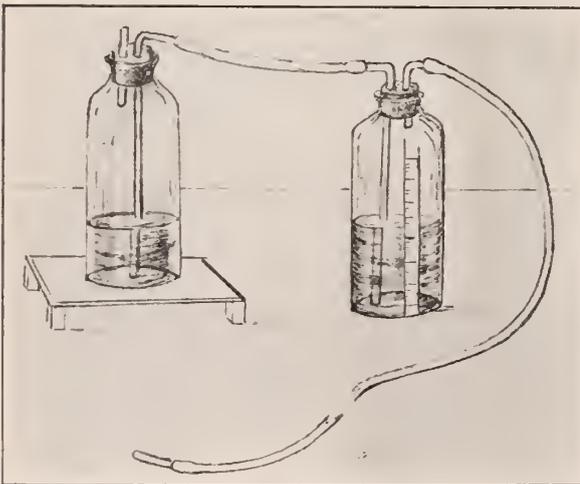


Fig. 3. Syphon bottle system for securing lung expansion.

two bottles, each having a rubber cork with two holes (fig. 3). In the first bottle a short glass tube, to which is attached a long rubber tube through which the patient blows, is placed in one hole. A long glass tube extending to the bottom of the bottle is passed through the other hole. This is connected by a rubber tube to a long glass tube extending to the bottom of the second bottle. In

the other hole in the second bottle a short glass tube is placed. On the first bottle is placed a strip of adhesive, marked usually in inches to indicate the contents of the bottle. The first bottle is then filled with fluid and the second placed with its base two inches higher than the first. The patient in blowing blows the fluid from the first bottle into the second. When he ceases blowing, the fluid runs back. The patient is instructed to blow into the bottle three or four times daily at first, but later more frequently. He is encouraged to observe the marks on the tape and determine how much can be blown out at a single blow and how many blows are required to empty the bottle. We have found that the patient usually takes considerable interest in the apparatus and it has been a great aid in securing lung expansion. We have never seen any harm result from blowing into the bottle.

*Sterilization of the cavity.* It has been our experience that this is usually not necessary, if there is adequate drainage accompanied by lung expansion upon the apparatus described above. In some cases, however, there is delay. In these cases we think it advisable to irrigate with Daken's solution.

*Maintain nutrition.* Careful attention must be given to the dietetic and hygienic requirements of the patient.

*Chronic empyema.* Failure of the healing of empyema and continued discharge are usually due to, first, a cavity within the chest; second, a foreign body within the chest; third, an open bronchus; and, fourth, an infected rib.

*A cavity within the chest.* This is usually the result of neglect, either because of (1) late operation, (2) the continued pneumothorax with fixation of the lung, (3) failure to secure lung expansion. In the presence of such a cavity it is best first to try to secure lung expansion through the use of the method described above. If this fails then operative procedure must be resorted to. Several operations have been advised for this purpose. (1) Extra pleura rib resection; (2) decortication of the lung; (3) epithelialization of the cavity through molding skin grafts into the cavity.

*Extra pleural rib resection.* Schede in 1890 described a method of raising an extensive skin and muscle flap and dissecting off the entire chest wall, allowing the skin and muscle fiber to fall against the collapsed lung. The mortality for this operation was fairly high. In recent years the principle has been modified by removing the rib subperiostally

without disturbing the pleura. This also is a rather extensive operation. It is usually best to do it in stages. After the ribs are removed the chest wall collapses, obliterating the space.

Decortication of the lung consists in the freeing of the adhesions and separation of the lung from the chest wall and the removal of the dense fibrous coat over the whole lung surface. This often proves to be a very formidable operation.

Epithelialization of the cavity. Beck of Chicago resected a portion of the chest wall and then turned the epithelial flaps into the cavity. From there this epithelium spreads over the surface of the cavity, resulting in cessation of discharge.

*Foreign bodies.* It not infrequently happens that a tube becomes displaced or lost in the chest or a portion of the tube breaks off. When this accident occurs, the pleural cavity should be immediately explored and the tube removed. The tube is not always easily found. We have recently had one patient in our clinic, in whom the tube had been in the chest wall for eleven weeks.

*An open bronchus.* This usually occurs in those cases in which there has been a lung abscess in conjunction with the empyema, but also occurs in some neglected cases in which the empyema has perforated into a bronchus before being opened. For a cure it is usually necessary for the chest wall to be opened and the open bronchus found and closed.

*Infected rib.* Occasionally an osteomyelitis of the rib follows drainage of an empyema. This requires the resection of the infected portion of the rib.

*Tuberculous empyema.* The fluid is usually of a serous character. This may be nature's way of producing lung immobilization.

Hedblom advises that in a closed pleural cavity with a sterile serous effusion, open drainage should not be done except in the presence of an impending perforation of the chest wall. Repeated aspiration of only a part of the fluid is indicated, if there is dyspnea on exertion or symptoms of circulatory embarrassment. In the presence of an active tuberculous process the replacing of the aspirated fluid by nitrogen or filtered air may be indicated. In cases where the lung is fixed so that it can not expand upon aspirating the fluid, he advises an extrapleural plastic operation to secure collapse of the cavity.

In the presence of a mixed infection, then, anti-septic irrigation with the Carrol-Dakin method or an open drainage is indicated. Open drainage is also indicated in the presence of bronchial fistula

and, if the fistula fails to close spontaneously, operative procedure to produce its closure will be necessary. He advises care in the use of Dakin's solution in excessively diseased lungs, because the corroding action may result in hemorrhage or the production of a bronchial fistula. With small cavities a skin or a skin muscle plastic operation will produce obliteration, but in large cavities of long standing, so that there is a markedly thickened pleura, a more extensive operation will have to be done.

*Lung abscesses.* Etiology of lung abscesses is, first, aspiration of foreign bodies or infected material; second, necrosis and suppuration accompanying infection; third, infected emboli; fourth, penetrating wounds; fifth, direct extension.

Willy Meyer classified lung abscesses, first, as the typical lung abscesses which occur subsequent to an attack of influenza or pneumonia and due to a simple necrotic process of suppuration; second, typical bronchiectasis (most authors place this under a separate heading), and; third, bronchiectatic lung abscess. Bronchiectatic abscess is descriptive of the pathologic appearance and not of the origin of the process. It results either from the aspiration of the infected material or by infected emboli, and presents a somewhat multiloculated appearance.

The diagnosis of lung abscess may or may not be difficult. With the history of aspiration of a foreign body or infected material or a recent inflammatory process in the lung which has failed to clear up, accompanied by dullness, or if the abscess be superficial and containing air, the presence of tympany, variation in the voice sounds, variable rales, purulent sputum containing elastic fibers and x-ray findings showing a more or less localized process, abscess of the lung should always be considered. Fluoroscopic examination and the exploratory needle are often of value. Stereoscopic plates should always be made, but even with the most careful examination the diagnosis will often be in doubt. Under such conditions, in a patient who is gradually losing ground, exploratory thoracotomy is indicated, but in general, however, exploratory thoracotomy is looked upon with suspicion.

#### TREATMENT

As a considerable portion of the lung abscesses result from aspiration, prophylaxis is important. Following an operative procedure requiring a general anesthetic, the patient should be carefully watched and the head kept on the side until thoroughly

awake in order to prevent the aspiration of the vomitus. In nose and throat operations under general anesthesia, the patient's head must always be so lowered that the blood and secretion will gravitate to the upper pharynx, from whence it must be frequently removed by aspiration or sponging. Lung abscesses follow tonsillectomies under a local anesthetic, so that it is necessary for the surgeon to watch and see that no blood accumulates about the epiglottis to be suddenly aspirated, if the patient should gasp. Patients who are advised to use local treatment about the nose should be cautioned. The author saw one case of lung abscess, due to a patient's aspirating a swab with which he was swabbing his nose. He accidentally passed the swab back through the nose, touching the pharynx and gasping suddenly, drew the swab into the right lung.

The treatment of lung abscess consists either in compressing the lung by pneumothorax or, when this is impossible due to adhesions, in opening and draining. Whether this be done in one or two stages depends upon the presence or absence of adhesions and the patient's general condition. The chest is opened usually by an incision between the seventh and eighth ribs, unless the location of the abscess indicates another location. If upon opening the chest the lung lies free, gauze should be packed about the wound and the wound closed. After forty-eight hours the gauze is removed under gas and a couple of days later, unless the patient's condition demands immediate action, the abscess is opened by cautery. Immediate operation would result in an empyema or lung collapse or both. In the extensive bronchiectatic lung abscesses a lobectomy will often have to be done. If the lobe can be easily brought out, this may be done in one stage. Lillenthal is of the opinion that a lobectomy requiring more than forty-five minutes is practically always followed by death and advises, in cases where the operation can not be rapidly done, that it be done in two stages.

*Bronchiectasis.* The diagnosis of bronchiectasis is made comparatively easy, if the patient is carefully observed, noting his ability to evacuate considerable quantities of pus, usually having a foul odor when in certain posture. X-ray findings are often of value, but sometimes are deceiving. In extensive cases of bronchiectasis involving a single lobe, lobectomy is indicated. This should be done usually in two stages. The best anesthesia for a lung operation is the gas-oxygen anesthesia, given with one of the better types of apparatus, so that

differential pressure can be used, provided the lung collapses.

*Tuberculosis of the lung.* Although therapeutic pneumothorax was developed and popularized by the surgeon, it is a procedure that should be carried out only by the specialist in pulmonary tuberculosis. When properly used it is of inestimable value, but when improperly used it may be productive of great harm. In cases which fail to yield to pneumothorax, extrapleural rib resection, producing a collapse of one side of the chest, is often of great value. This may be done by resecting a comparatively small portion of the rib near the angle posteriorly or the resection of a portion posteriorly and a resection of a portion anteriorly or the resection of a long portion of the ribs laterally. If the operation is to be done, a sufficient number and a sufficient portion of the ribs must be resected to produce the necessary compression. As the patients requiring this type of operation are often seriously ill, the operation must frequently be done in stages. This type of operation has practically replaced the extensive operations described by Schede and others at the close of the last century.

*Heart lesions.* Cardiac surgery is being developed at the present time. Within the past two years stenosed mitral valves have been cut by Graham, Allen, Cutler, Levine and Beck. It is too early yet to properly estimate the value of the procedure. Theoretically it offers relief to a certain class. In adherent pericarditis producing serious cardiac embarrassment, the freeing of the heart has been followed with beneficial results in some cases. The drainage of purulent pericarditis has saved lives, as has also the suturing of heart wounds and the removing of foreign bodies from the cardiac wall. Owing to the delicate nature of this type of surgery, it will probably always be more or less limited in its use.

*Tumors of the chest wall and pleura.* These can be easily removed whether benign or malignant, if seen early. The pleura will stand extensive operation for the removal of the tumors. The author has removed an osteochondrosarcoma approximately 10 cm. in diameter, to which the lung was adherent and which required not only the resection of a portion of the entire chest wall, but of the visceral pleura and a portion of the lung, with no apparent shock to the patient. Although the patient later developed a metastasis in the spinal canal which resulted in death, there was no evidence of any re-

currence in the chest, when the patient was last seen. The patient was not seen during the last two months of life and a postmortem was not obtained, so it is not known whether there was a late recurrence in the chest.

Lung tumors are usually malignant and secondary to tumors elsewhere in the body, so that this field of surgery offers but little relief.

*Esophagus.* Strictures of the esophagus have long been treated by dilatation or when complete by gastrostomy, enabling the patient to be fed directly into the stomach. There has, however, been considerable work done on the reconstruction of the esophagus. Zaaiger, in 1913, reported operation for carcinoma of the esophagus. Previous to this time, Völker, Fummell, and Küttner had described methods of approach through the abdominal route and Wendel and Sauerbach had described a transpleural route of approach. More recently, Lillienthal, Willy Meyer and others have given the surgical treatment of carcinoma of the esophagus considerable attention.

Two principal methods of esophageal reconstruction have been tried. One, by bringing the esophagus out through the neck and constructing a skin tube anterior to the chest wall that connects with the gastrostomy opening in the epigastrium, and the other the reconstruction of the esophagus within the thorax. The stomach has been brought up through the diaphragm and anastomosed to the esophagus above the site of the tumor. Another method has been to make a tube from the greater curvature of the stomach and anastomose it with the esophagus in the chest. Recently Hueur and associates have devised a method of transplanting the diaphragm upward so that the lower portion of the esophagus becomes an intrapleural abdominal organ, so the removal of a portion of the esophagus and the anastomosis between the stomach and the esophagus may be done below the diaphragm.

We have been doing some work on dogs, following the method of transplanting the stomach upward. In this work anesthesia is a very important factor and our chief difficulty in the technic has been in securing a satisfactory anesthetic. In this work care must be taken to close the opening in the diaphragm. One of our dogs died from a strangulated diaphragmatic hernia taking place by the side of the stomach.

In concluding this brief review of the present status of chest surgery, I think we can safely state

that this offers a field for careful study. As a result of study during the war, the treatment of empyema is better understood and can be carried out by the general practitioner in the more remote districts as well as in the metropolitan centers. A collapse of the chest wall offers relief to a certain group of tuberculous patients which have not been relieved by pneumothorax. Chest cavities resulting from neglected empyema can now be obliterated without the danger experienced from the former extensive operation. With the development of chest surgery as a specialty, relief is going to be offered to a considerable group of individuals suffering from lesions of the heart, esophagus and lungs. Lung abscesses while always serious will not result in the high mortality that they have in the past. Mediastinal abscesses may be opened and drained, where before it meant almost certain death.

#### PERIARTERIAL SYMPATHECTOMY\*

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There are many cases in which the arterial circulation is so interfered with that normal function, tissue repair, and even the life of the part affected may not continue. These cases have always been very troublesome ones for the surgeon, who has been forced to resort to most unsatisfactory palliative measures, or else to admit his failure, and amputate the offending part.

Jaboulay, in 1889, conceived the idea of increasing the impaired circulation by removing the outer covering of the artery supplying the affected part. This procedure was entirely lost sight of until his pupil, Rene Leriche, of Lyons, France, brought it into prominence in 1913, but we in this country heard nothing of it until Leriche presented the result of his studies before the American Surgical Association in 1921, at which time he reported the results in sixty-four cases.

The theory upon which the operation is based is that the sympathetic nerve fibres, which lie in the adventitia of an artery, transmit impulses which normally keep up the proper tone of the vessel wall. In certain abnormal conditions the vasoconstriction action transmitted by these nerves does not permit a sufficient quantity of blood to go to the affected part. There is a considerable difference of opinion as to the interrelationship between these sympathetic nerves and the central nervous system.

\* Read before the Portland City and County Medical Society, Portland, Ore., May 6, 1925.

Leriche has pointed out certain phenomena which he insists are constant. When the sheath of an artery is removed, just as the external layer is pinched the vessel contracts, its pulsation stops and its size diminishes. "If you excise the cellular layer the diminution will progressively reach the third, or the fourth, of the normal size of the artery." The segments on both sides maintain their normal size, provided the operation has not injured them. This arterial contraction usually causes the pulse to disappear distally, but it does not altogether interrupt the circulation.

This arterial contraction is the primary element in the normal reaction to excitation. This persists for several hours, from three to fifteen, and during this time the affected limb is colder than before. Then there takes place the second element of the characteristic reaction as follows: (1) There is an elevation of the temperature of the affected side of several degrees. (2) The arterial pressure is increased. (3) There is an increasing amplitude of oscillations as shown by the sphygmomanometer. This vasodilation lasts from several days to several weeks.

Leriche states that there are two groups of cases in which arterial sympathectomy may be applied.

*First group* is characterized by "stuteur des arteres," and by Raynaud's disease. "Stuteur des arteres" is caused by sudden excitation of the external arterial layer, and there is a sudden extreme anemia, which may even go on to gangrene. Examples of this were seen in war wounds. This and Raynaud's disease typify the cases of the spasmodic or painful anemias.

*Second group.* In this group there is a not well understood disturbance of physiologic and biologic function, induced by prolonged contraction of the vessels, or abnormally persistent dilatation. It produces biologic disturbances which cause various associations of motor, sensory, glandular and trophic symptoms, even local necrosis. In this group would be placed some painful stumps, causalgias, muscle contractions as in Volkman's ischemic paralysis, endarteritis obliterans and trophic ulcers.

Leriche has now performed over one hundred operations in a great variety of cases. Within the past four years cases have been reported in the United States by a considerable number of surgeons, no great number by any one. Their results have not all agreed with those of Leriche, some even failing to observe the characteristic vascular constriction and dilatation. There have been failures and

successes. It is to be hoped that when we have a sufficient number of cases reported by independent observers, we may have more definite knowledge as to the indications for this operation, and also may know its limitations.

The technic of the operation is in itself simple. Expose the artery, e.g., the femoral or brachial artery, free it from its sheath for a distance of eight or ten centimeters, and remove the outer layer or coat of the artery. This is a definite layer, and one must not be satisfied with a few shreds of areolar tissue. The characteristic contraction and diminution in size must be observed, and the surgeon should satisfy himself that the entire outer coat is removed.

The first case, which I am reporting, is of special interest in that two sets of arteries were involved.

Case 1. S. L. first seen in consultation with Dr. Jno. Fitzgibbon, June 23, 1923. He was twenty years of age. Family history negative. When he was sixteen years old he had an unexplained anemia with marked weakness. This lasted for several months. He had had no pain at that time.

On May 1, 1923, when in Seattle, he began to have pain beneath the left costal arch. He was taken to a hospital, and very extensive investigations were carried out. He says that finally a diagnosis of perisplenitis was made, and he was given Alpine lamp treatments. By June 10 he felt entirely well, and came to Portland.

On June 21 he was taken with severe abdominal cramps. The pain was in the left side of the abdomen. He had no fever. His urine was negative, both chemically and microscopically. Analysis of the stomach contents and X-rays of the stomach were negative. His stools contained occult blood. The only abdominal tenderness was on the left side about the level of the umbilicus. He was apparently relieved by food and by alkalis. A diagnosis of probable duodenal ulcer was made, and he was put on a Sippy treatment with marked relief.

In July he had a similar attack of abdominal pain, being again admitted to the hospital and carefully observed. The pain at this time and tenderness were left sided. He again had no fever. His white blood count was increased. We were unable to make a diagnosis. This attack occurred while he was on his strict Sippy diet and treatment. In a few days he felt well again, left the hospital, and continued on his diet as before.

He was again admitted to the hospital on August 23, giving a history of having had sharp, severe pains in the left lower quadrant for five days. His examination was the same as on previous occasions, except that his abdomen was distended, and there was more tenderness in the left lower quadrant. His temperature was normal, and again he had an increased white blood count. Enemas returned clear. A diagnosis of probable volvulus of the sigmoid was made, and immediate operation disclosed the fact that there was free fluid in the abdomen. The appendix was normal. The mesenteries of the sigmoid and cecum were unusually long. The sigmoid lay pulled over to the right, and apparently turned, with the small intestine lying to the left and in front of it. There did not, however, seem to be enough of an obstruction by this turning of the sigmoid to

account for his pain or for the obstruction. Prophylactic removal of the appendix was done. His abdomen was closed without drainage.

Following operation he was very comfortable for several days, and then he had another attack similar to his previous ones. In this attack he had a low fever. Examination showed his abdominal incision clean. He had an increased blood count, and on September 3 his abdomen became rigid. His abdomen was reopened on this date. Exploration showed that there were many loops of gangrenous small intestine. About twelve inches from the ileocecal junction the intestine had perforated, and the fecal contents had spilled into the right side of the free abdominal cavity. I resected five feet of gangrenous ileum with a few inches of normal intestine at either end, and as the patient's condition was not good did an end to end anastomosis, it being more rapid, brought out a drain through a stab wound in the right lower quadrant, and closed the median abdominal incision. He had a very stormy convalescence and developed a fecal fistula, but his abdominal incision finally healed.

In October he began to complain of pain in his left great toe. Examination of the foot was negative. He thought that he had an ingrowing toe nail, but there was no evidence of it. At times the pain was very severe in character; at times it would be gone. This continued for about two weeks, and then gangrene developed in all of his toes. This was a dry gangrene. November 17 the toes were amputated through the line of demarcation. The pain, however, continued in his foot. It was so severe in character that he would scream and cry with the pain, and his characteristic position, whether he was in bed or in a wheeled chair, was sitting up doubled over crying with his face buried in a pillow. Opiates were necessary to control his pain.

In December he complained of pain in the right side, extending through into the back and down into the bladder. I feared another extension of his intestinal gangrene, but he solved this problem the following morning by passing a stone, which had evidently come down the right ureter.

In January the spasmodic pains in his foot were so severe as to require opiates a great part of the time to control them. He would scream at night, and in the day time with this pain.

On January 18, 1924, the left femoral artery was exposed in Hunter's canal, and the adventitia stripped off of the artery for about two inches. Pulsation in the artery became less as soon as it was pinched, and after the adventitia had been stripped off the artery became very much narrowed and pulsation ceased. The foot was cold afterward for about four hours, and then became very much warmer than the opposite leg. This increased temperature persisted for several days. As soon as he awakened from his anesthetic he said that his pain was gone, and is still gone, now sixteen months later.

Case 2. This case seen in March, 1924, was that of a war veteran, J. T. L., age 35, who in October 1918, while wearing tight leggings, began to have pain and numbness in both legs. He was treated in military infirmaries several times for this condition. This continued off and on for several months. Finally his legs became better, and were causing him no trouble at the time of his discharge from service in July, 1919.

In November, he began to have numbness and pain in his legs, and developed gangrene of the toes of both feet. All of the toes of both feet have been amputated. The stumps on the right foot healed, and he is able to walk upon it without pain. On

the left foot the ulcers have not healed, and he has severe cramp-like pain. This comes in attacks. At times he is comparatively comfortable, even for several weeks. In his worst attacks the pain is so severe as to keep him from sleeping several days at a time. The dorsalis pedis artery could not be felt pulsating in either foot.

This was considered a proper case for periarterial sympathectomy, and the operation was performed on April 24, 1924. The left superficial femoral artery was exposed in Hunter's canal and the adventitia stripped from the artery. There was the usual characteristic diminution in size and cessation of pulsation. Just as this stripping process was being completed the patient, who was evidently too lightly under the anesthetic, suddenly jerked up his left leg and a hole was torn in the artery. Notwithstanding the lack of pulsation at this point, there was a very free flow of blood in spurts. There was no arterial suture material at hand, but by splitting a piece of linen thread into very fine pieces I was able to repair the tear. This was made more difficult by the fact that the outer covering of the artery had already been removed. The characteristic coldness of the leg for a few hours was noted, and then an increased warmth in spite of the narrowing of the artery necessitated by the repair of the puncture. The ulcers of the stumps of the toes, which had been open for four years, healed and he was relieved of his pain. The circulation of the feet seemed better.

He writes May 2, 1925, that his ulcers have remained healed, and that he has no pain whatever.

Case 3. Another war veteran, E. P., age 46, seen in June, 1924. He was on the Tuscania when she was torpedoed, and he was in the water for many hours. Following this he was hospitalized in England for six weeks with bronchitis and pneumonia. In May, 1918, he cut his right foot with an axe. He was hospitalized then and the wound sutured, but it resulted in a bad scar. He was again operated on October, 1918, at which time his foot was amputated because of the ulceration and pain. He was unable to walk upon this stump and in January, 1919, his leg was amputated below the knee.

The stump has never healed. He has had a great deal of pain, so much so that since then he has been kept in the hospital a major portion of the time. Local examination showed an amputation stump four inches below the right knee. It was flexed at a right angle. On the end were large ulcerations. The tissues of this stump seemed slightly edematous and were somewhat cyanotic. The color returned slowly on pressure.

On June 18 the left superficial femoral artery was exposed in Hunter's canal and a periarterial sympathectomy was performed. There was not in this case the characteristic diminution in size, although I believe that all of the adventitia was removed for a distance of eight centimeters. I felt that perhaps this was due to the fact that there was only about six inches of the artery left distal to the point of removal of the adventitia. It was reported to me that a few hours following the operation the stump seemed warmer, and there was some temporary improvement, but not the complete relief of pain which characterized the other cases. The ulcers healed, but finally recurred, and he writes April, 1925, that he feels that he was not benefited in any way by the operation.

Two of these three cases have evidently been very definitely benefited. It is my opinion that, in properly selected cases, the operation will prove of definite value.

## SURGERY OF THE GALLTRACTS

SOME OF THE MAJOR PROBLEMS.  
REPORTS OF CLINICAL CASES.\*

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Galltract surgery is often lightly classed as minor abdominal surgery. This is also true of appendicitis. This is really true in the simple chronic cases with perfectly normal anatomic arrangement. The late Maurice Richardson used to say that the occasional operator should operate on acute appendicitis cases but should send the chronic appendicitis cases to a trained surgical specialist. These remarks we now appreciate more fully when we realize that probably in less than one-third of the cases, in which operation has been done in past years for chronic appendicitis, have the symptoms been relieved.

Much the same statement may be made relative to so-called cholecystitis, in which there are no stones or in which there is no demonstrable pathology in the gallbladder wall. In a relatively thin patient, removal of the gallbladder is one of the simplest of operations, when performed for the removal of a relatively normal gallbladder which has no stone, no inflammation or in which the stone is seemingly harmless, and yet very serious consequences sometimes follow in a case where the operation seems perfectly simple and perfectly successful. It is my opinion that far too many normal gallbladders are being removed. I am inclined to question the surgical judgment of an operator who proposes to remove a perfectly normal-looking gallbladder simply because the patient has a distressing right-sided pain.

Pain in the right side of the abdomen is frequently due to defective fixation of the ascending colon and the consequent secondary developments which make a pull on the peritoneum in the neighborhood of the gallbladder or on its wall. Removal of the gallbladder will sometimes relieve such pain temporarily. The pain usually returns as the membranes reform. There are some cases, of course, of chronic infection of the gallbladder without stones but these are not as frequent as we have been led to believe. Concerning the chronic pain in the region of a blue gallbladder and the supposed pathology connected with it, it is safe and conservative

to say that such a case does not usually require the removal or drainage of the gallbladder. When stones or an actual infection exist or where jaundice exists, it must be conceded that organic surgery is required.

A case that we have this morning for operation is one in which a cholecystectomy was performed two months ago for a somewhat yellowish, thickened gallbladder which did not contain stones. The operation was performed by a well-trained surgeon and no difficulties were experienced in the operation. The patient entered our service ten days ago and has been under observation since that time. The doctor who operated upon the case sent a letter with the patient, giving a frank statement of the case as follows:

"For the past year he has been failing in strength and about two and one-half months ago came to me complaining of dizziness, weakness, coated tongue, tenderness over the gallbladder area and under the right shoulder blade. There was no vomiting and no jaundice. X-ray showed great density in the gallbladder area. As stated, the abdomen was explored to find the colon at the hepatic flexure, gallbladder and all firmly matted together by fibrous adhesions. The gallbladder was thickened, enlarged and contained thickened bile but no calculus. We explored the area, finding no sign of stones in the common duct or other parts. The gallbladder was removed and a rubber tube attached to the stump of the cystic duct. Since then the patient has had irregularity in bile flow and for the past month has had a fistula, discharging bile. In some manner the bile duct was traumatized by pressure of the tube or a calculus may have descended from the hepatic duct."

The patient, when he entered the Portland Surgical Hospital ten days ago, was somewhat jaundiced and had a biliary fistula which had closed once and then opened, at which time a tube had been inserted by the doctor. The jaundice immediately cleared up. The tube was still in the wound when the patient arrived, but there has never been any evidence of bile in the stool since the original operation. Ten days ago patient was given a dose of castor oil and tube removed for the purpose of determining whether or not the duct was open. The fistula closed within two days. The patient has since that time rapidly become jaundiced. We will be prepared for transfusion in case the patient has a hemorrhage afterwards. Will also give calcium chloride, if necessary.

As we begin to operate, we note that the wound has not entirely healed. The skin of the abdomen is deeply jaundiced and the jaundice has rapidly increased during the last few days. We make our incision practically in the scar of the other incision. We cut out the scar and extend the incision downward to the peritoneum. We open the peritoneum at the lower angle of the wound, push off the omentum, put in a pack of gauze so that in case we open an infected sinus we have provided for it. Gradually we separate the omentum from the sinus, pushing the separation down to the posterior parietal peritoneum. The sinus leads directly backwards along the under surface of the liver and there we reach what appears to be the foramen of Winslow. We first isolate the common duct. This is difficult. Here is a mass of edematous tissue. With some difficulty we locate what seems to be the common duct in front of the foramen of Winslow. We push up beneath the liver and detach the canal which has formed the sinus. Here we see bile coming from the upper end. I pass a probe into the duct upwards and a large quantity of bile pours out. This

\*For nearly three years I have been holding clinics three days a week, at which visiting physicians are in attendance. For the most part all the remarks made in the operating room have been recorded by a shorthand reporter. A study of these reports has caused me to prepare this clinical article which is largely made up of case reports.

has evidently been dammed up for the past few days.

At first we fail to find the lower end of the duct. The upper end now seems quite open. I will separate these adhesions and try to penetrate this edematous mass below. In doing so the probe enters what appears to be a canal. I slit down this tissue on the probe, pull it open, and it appears to be the lower end of the duct. This end of the duct is approximately three-fourths inch away from the end which is discharging bile. It seems quite probable that the duct between these ends is entirely absent. I now pass a small probe downward with some difficulty but it seems to go into the duodenum and, as I pass my thumb and index finger from the duodenum upwards along the probe, I do not find any evidence of a stone. It seems that the common duct



Fig. 1. Rubber tube bridging the gap between the ends of a severed common hepatic duct. Tube anchored by one stitch, omentum being drawn over the opening, where it is to be tacked down loosely to form the anterior wall of the canal. The tube in this case is a section of a No. 16 catheter. The Mayo tube is shown in the lower left hand corner.

has collapsed, probably as a result of non-use during the past two months. Therefore, I pass a probe-pointed sound. With some difficulty it passes into the duodenum. I have here a No. 16 catheter which I try to pass down but it will not pass. It goes down about one-half inch or more and stops. I insert the probe and cut off the end of the catheter and attempt to pass it along the probe which acts as a guide. This is a failure.

I will now take a small uterine dilator with probe point and pass it downward into the duct and stretch it as much as seems safe. I am able to get this down for about one and one-half or two inches but no further. In the meantime the bile is flowing into the wound and is being caught on sponges. The distance from this opening to the duct above, as I before stated, is about three-fourths inch. I would like very much to be able to pass this catheter all the way into the duodenum but I am unable to do so.

There is so much inflammatory tissue here that I am afraid to dissect up the duct for fear that I will injure the tissue I now have.

Therefore, I hope to bridge this duct with a tube of the kind used by Dr. C. H. Mayo in such cases, which consists of a flange made by slipping a section of a large catheter over a smaller one. Two of these, about one-half inch apart, serve to bring the ends together over this coupling, utilizing the principle of Wilms which is the leaving of a tube permanently in the duct. Unfortunately, this Mayo type of tube which I have prepared is too large for the duct so I will use this piece of No. 16 catheter. This is a rather small catheter to carry the bile down, but it is the largest we can use and even this we cannot get into the duodenum. I, therefore, take a syringe and inject water into the catheter slowly and see whether or not the water goes into the duodenum. Apparently the fluid is going in. Four ounces are passed without any coming back into the wound. We are, therefore, quite sure the duct is open from the end of this tube downward. I now cut off the upper end of this catheter obliquely. By bending the catheter I am able to insert the upper end of the tube into the liver end of the duct. There the tube is in place (fig. 1.). You will note that this tube is now lying in a deep groove. It may be possible that there is some of the back wall of this duct still remaining. We were unable to see any evidence of it.

It is impossible to mobilize and accurately locate the upper end of the duct. I think it is just as well that this channel be left open for the present, lest the upper end of the very small catheter become obstructed with mucus or debris of one kind or another. I, therefore leave the front surface of the channel open but bring omentum across it and tack it down to the neighboring peritoneum, thereby covering the exposed tube as it crosses the break in the bile duct (fig. 2). I leave the omentum loose between sutures where I expect to put a quarantine drain. If this tube does not carry the bile properly or becomes blocked, the bile in a few days comes out in this break and the patient will be saved a serious jaundice which might occur while an obstructed tube is opening up. Now you see we have the omentum tacked down over this break. We now place a number of gauze wicks down over this omentum and particularly along the edge of the omentum, so that any bile coming out may be delivered to the surface. Two sheets of four-ply rubber tissue are fitted around these wicks and around the infected area (figs. 2 and 3). The two halves of this quarantine drain are brought together, forming a cigarette drain. The wound is closed around this large cigarette drain and the operation is completed.

An attempt to reconstruct the common duct has been made by a number of experimenters. I think Sullivan was the most successful until the idea of leaving a permanent tube was brought out by Wilms. Sullivan passed a catheter into the liver end of the duct and then passed the catheter into the duodenum and through an incision in the duodenum sewed a small sponge to the end of the catheter with the idea that the peristaltic wave of the duodenum would grasp the sponge and pull it out in the course of a few days. The gap bridged by the tube was covered with omentum. In order to prevent too early removal of this tube by this means, it was sewed to the duct and to the tissues around with catgut suture, with the belief that as



Fig. 2. Omentum has been tacked loosely to the peritoneum of the lesser omentum all around the covered opening. The ends of a dozen gauze wicks are placed so as to surround the edge of the omental covering and to take up any leakage which may come

from under the edges of the omentum. Two sheets of 4 ply guttapercha tissue are made to surround the gauze. These wicks and rubber tissue make a cigarette drain about one inch in diameter, making the impression of fig. 9 with the rubber tube absent.

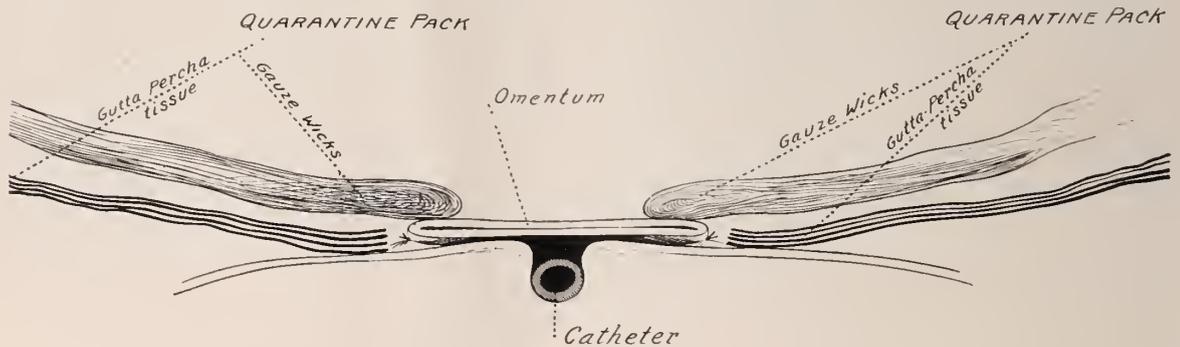


Fig. 3. Cross section of fig. 2.

soon as the catgut suture had been absorbed the tube would be pulled out and would pass into the duodenum. The dogs upon which this was tried lived for several months.

I think Brewer, of New York, was the first to apply this to the human being. For several months the patient was cured. Then a jaundice developed and the sinus (the space or channel between two ends of a duct can only be classed as a sinus) gradually closed so that this idea of Sullivan of having the intestine pull the tube out at a certain time has not been a success, although Hagyard in the April number of *Northwest Medicine* has re-

ported from the literature some successes by various surgeons. Dr. C. H. Mayo combined Wilms' idea of leaving in a permanent tube with Sullivan's idea of going directly into the duodenum without using the lower end of the duct. By taking the funnel shaped end of a catheter and putting two flanges one-half inch or so apart about the middle of a two and one-half inch piece of catheter to prevent it from going immediately into the duodenum and carefully joining the tissues around it, he makes a good connection. Without doubt, W. J. Mayo's method of suturing the hepatic duct, when possible, directly to the duodenum and this method

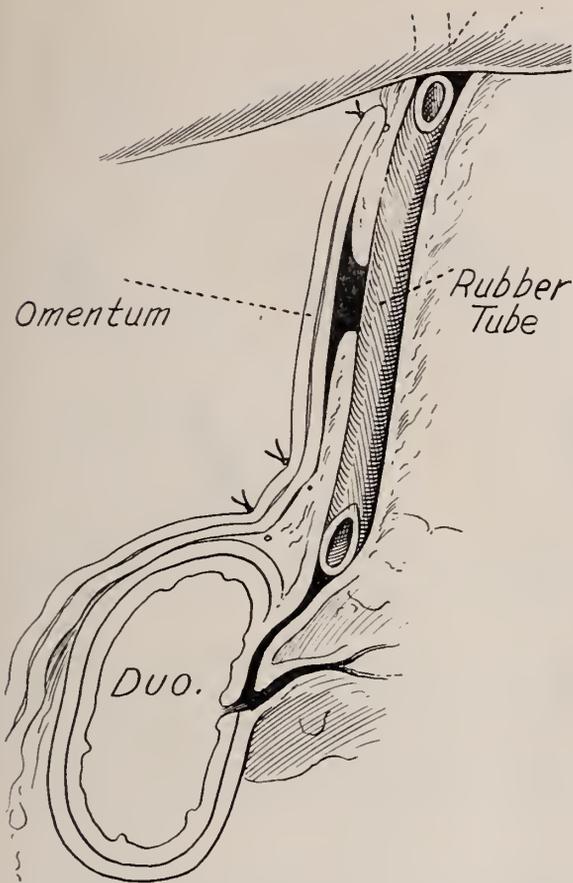


Fig. 4. Longitudinal section of figs. 1 and 2, showing the position of the opening, the tube and the omentum.

of C. H. Mayo's use of the tube when the former is not possible gives us our best methods of dealing with these very baffling conditions, although not yet ideal by any means.

A little more than two days after the above operation, bile appeared in the stools and also appeared on the dressings. It was at first thought that the bile appearing on the dressings might be due to the bile saturated blood as sometimes takes place. After the wicks were removed on the sixth day, quite a free flow of bile came through the wound. Fourteen days after the operation, the rubber tissue was removed. Bile was still flowing some from the abdominal incision. The bile ceased to flow in three or four days after the drain was entirely removed. Stools became perfectly normal, jaundice rapidly disappeared and when the patient left the hospital the wound was closed, just four weeks from the time of the operation. Recent reports from the patient show that the tube is functioning perfectly and he is in perfect health more than a year after this operation.

I think I can no better state my position on this

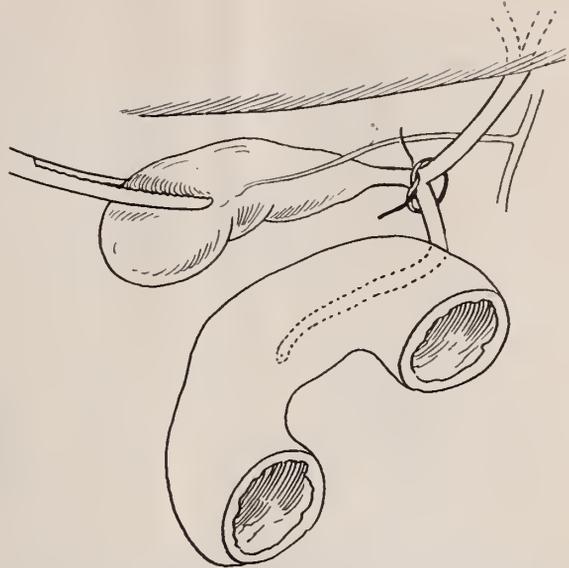


Fig. 5. Gallbladder is mobilized from its fundus toward the duct. Tension pulls up a loop of the common duct at the entrance of the cystic duct. A ligature here may remove a partial or complete section of the common duct.

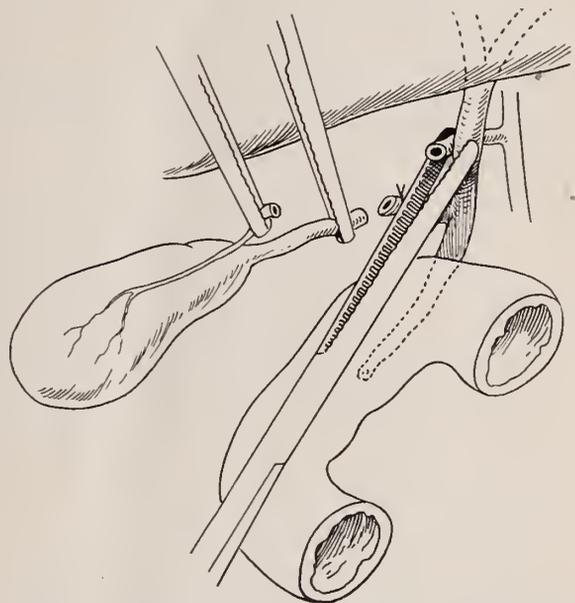


Fig. 6. Gallbladder has been removed, cystic duct tied. The cystic artery having escaped, it is caught in the point of a forceps which also includes the common hepatic duct.

subject than to quote from a letter written to the doctor after the above operation:

"Every once in a while an accident of this kind occurs. I had one myself which I was never able to explain satisfactorily. I think one way in which such an accident may occur is that, in pulling up the gallbladder and stripping it out from the fundus, the common duct, by traction on the cystic duct, is kinked and a loop is pulled upward in a line with the cystic duct and the ligature is inadvertently

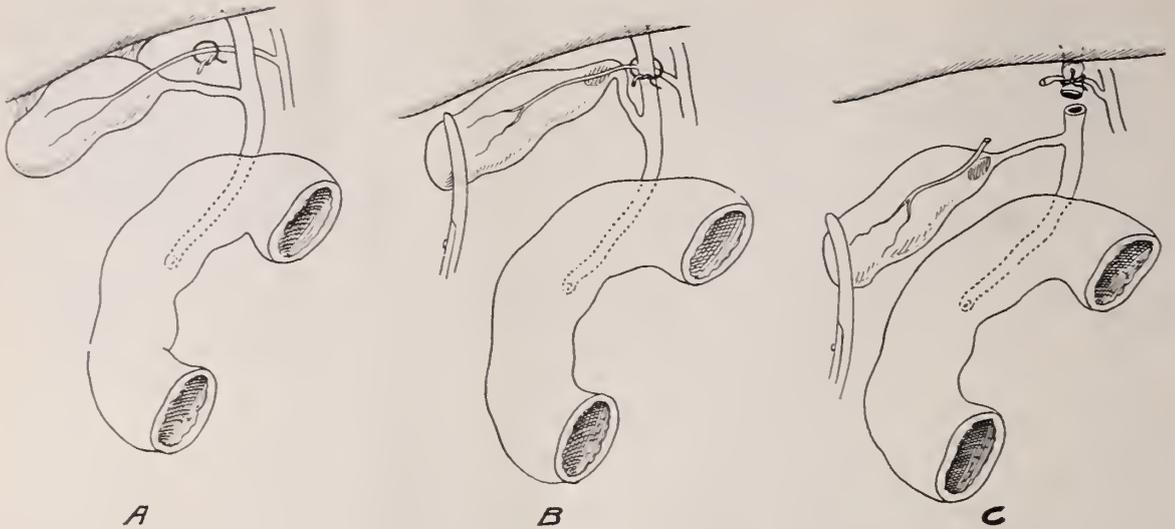


Fig. 7. (a) Normal anatomic arrangement with easy ligation of the cystic artery. (b) Short cystic artery which holds the cystic duct parallel to the common hepatic duct and may easily be tied. In passing a

ligature the two may easily be included in the same ligature. (c) Report of such an incursion. (Taken from Stetten's article).

placed low enough down on this folded common duct to take out the side or even a complete section of the duct (fig. 5). On the other hand, occasionally the common hepatic duct and cystic duct lie parallel, almost as if in one sheath. Sometimes in grasping for the cystic artery this duct is caught" (fig. 6).

I am very certain that this is what happened in my case, for I well remember, after I thought the operation was completed, my attention was called to rapid bleeding. I hurriedly caught the end of the artery with forceps and tied it, not thinking of the possibility of an anomalous arrangement of the vessels. The patient developed a severe jaundice immediately. A fistula developed and bile began to pour out in about six days. The jaundice immediately cleared up. The patient had a biliary fistula which had to be operated upon later.

In this connection two illustrative cases have been reported in *The Surgical Clinics of North America* during the past year. These both occurred in the practice of very distinguished and very careful surgeons. In the April, 1923, number Dr. DeWitt Stetten (pages 539 to 549) relates two interesting cases along this line and shows some very important anatomy. In one of his cases he reports having tied the common hepatic duct in the same ligature with which he tied the cystic artery. I have taken the privilege of reproducing his pictures which very graphically show how it is done.

According to Stetten's report, a small, somewhat thickened gallbladder was found adherent at its fundus to the duodenum. It contained one small ovid

stone. No calculi were palpated in the ducts. He separated the gallbladder from the duodenum. The cholecystectomy was performed in the usual fashion from above downward. The operation was not exceptionally difficult. After separating the gallbladder from its bed in the liver, he very carefully passed the usual ligature around what he took to be its mesentery and divided with scissors the tissues distal to the ligature. He noticed a lumen of some kind of vessel, 0.5 cm. in diameter, in these tissues. After some search, he discovered that he had tied the common hepatic duct along with the cystic artery. The end of the ligature was removed, the vessel was caught, separated and tied. Bile freely flowed from the proximal hepatic duct. Fortunately he recognized his difficulty at the time and made an entire anastomosis between the ends of the duct with good results. Figure 7, reproduced from Stetten, shows the anatomy which caused the accident and also the point where the duct was caught.

In the October, 1923, number of *The Surgical Clinics of North America* the well known surgeon, Dr. Arnold Schwytzer, of St. Paul, reports a case under the heading "Accidental Complete Excision of the Hepatic Duct." He even removed the bifurcation of the hepatic duct. Fortunately Schwytzer also discovered his accident at the time. On inspecting the gallbladder after its removal, he found one and one-fourth inches of the common hepatic duct attached to the side of the gallbladder. The identity of the duct was proven by microscopic examination (frozen section).

The patient was very old and he waited about six days before reopening. In searching, two catgut sutures were found and removed, at which time the cystic artery was reopened. This was tied and a No. 14 catheter was passed down through the distal end of the duct into the duodenum. The upper end of the tube was passed upwards into the left hepatic duct and tied to the cystic artery. The catheter was then protruding far down into the duodenum and fixed into the hepatic ducts. Schwytzer is unable to account for the tube remaining in its place, but by an x-ray picture he found that the tube was still in place properly functioning two years after the operation.

It is fine to get these reports admitting the accidents which were discovered at the time of operation, but in most cases the accident has not been discovered at the time of operation and therefore is not usually reported for obvious reasons. I think almost once a year I am called upon to operate upon a case of this kind, in which a complete biliary fistula has followed a cholecystectomy by some one. Two of these cases came to me in one month. It is quite probable that a considerable portion of these result from poor surgery but it must not be forgotten that:

1. *An anomalous arrangement of the blood vessels or the bile ducts may cause disastrous results in the hands of the most capable surgeon even in the simplest case.*

2. *In fat patients or in cases where inflammatory adhesions exist or in jaundiced patients where bleeding is free and the blood fails to coagulate, difficulties are often very great and the most competent surgeon may have an unavoidably serious accident, wherein the continuity of the duct is completely destroyed.*

3. *Reconstruction of a destroyed common hepatic duct is the most difficult feat connected with gall-tract surgery and is often attended with failure in the hands of the ablest surgeons.*

(To be continued.)



## DIAGNOSIS OF UROGENITAL TUBERCULOSIS\*

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The tubercle bacillus strikes the urogenital tract in the male chiefly in two places, the kidney and epididymis. In the female the kidney is the chief location, genital tuberculosis being infrequent. Urogenital tract tuberculosis is rarely, if ever, primary, being usually dependent on a focus of the disease elsewhere in the body, lungs, glands, etc., where it may have been quiescent or chronic. Tuberculosis of the kidney is often associated in the male with genital tuberculosis, but the lesion in the kidney is usually the primary focus, the mode of infection being chiefly hematogenous.

For purposes of study, I shall divide the subject in two parts: (I) Tuberculosis of the kidney and bladder. As they are so associated, it is difficult to consider them separately. (II) Tuberculosis of the male genitalia.

I. The onset of renal tuberculosis is very insidious and for a long time painless, so usually no symptoms appear till the bladder is involved, as it always is, secondary to tuberculosis of the kidney. It seems accepted that the progress of the infection is from above down, from the kidney to the bladder and not the reverse.

Ekehorn,<sup>1</sup> of Stockholm, in a recent review in *Tubercle* of the whole subject of tuberculosis of the kidney, divides the symptoms leading to a diagnosis into three groups: (1) Those referable to the kidney, (2) those referable to the bladder, (3) changes in the urine.

1. Regarding the first group he says there may be no symptoms, or only a sense of weight or dull ache in the kidney area. Rarely there is acute pain, colic often associated with hematuria. Objectively there may be elicited tenderness over the infected kidney by fist percussion and the kidney felt, if enlarged.

2. The bladder symptoms are by far the most important and earliest to attract the patient's attention. The chief of these is frequency of micturition, more marked at night than by day, with pain and strangury. The pain is felt toward the end of micturition as a burning sensation with tenesmus. This condition becomes progressively worse and there may be at times incontinence, the bladder capacity being limited and the urgency great.

\* Read before Pierce County Medical Society, Tacoma, Wash., Sept. 9, 1924.

3. As to the changes in the urine, Ekehorn states that the urine may appear negative in the early stages of the disease and yet microscopically reveal the tubercle bacillus in a high percentage of cases. Later it appears turbid with a characteristic pallor, the normal yellow color disappearing. The quantity is increased. Early polyuria should excite suspicion. It is acid, presents pus cells, albumin and often blood in microscopic quantities at first. Hematuria may be the first and only symptoms attracting the patient's attention.

The only pathognomonic finding is the presence of tubercle bacilli in the urine and usually they are found to be present fairly early in the disease. They can be found in 80-90 per cent of cases. Repeated guinea pig inoculations will clear up the diagnosis in the remaining 10-20 per cent of cases, in which ordinary smears do not reveal the tubercle bacillus. In women the presence of tubercle bacilli in the urine at once diagnoses renal tuberculosis but not necessarily in males, as the cystitis may be an ascending infection from a tuberculous epididymis or prostate and the kidney not involved. The tuberculous pyuria is also likely to be sterile to culture, while other types of pyuria show pyogenic organisms on examination.

Caulk,<sup>2</sup> in reviewing the question of diagnosis of renal tuberculosis, says the symptomatology is most suggestive. The patient is usually a young male (Braasch's figures 63.5 per cent male; 36.5 per cent female), 20-40 years of age, with vesical symptoms, as frequency, burning pain and terminal hematuria. The cystitis resists medication, is aggravated by silver nitrate or urinary antiseptics of the formalin variety, with periods of remission and exacerbation, becoming progressively worse. He states that an unobstructed bladder, in which stricture, stone, hypertrophied prostate or gonorrhoea cannot be demonstrated and in which the cystitis fails to subside in a week or two of local treatment, is usually tuberculous. Furthermore, hazy urine with occasional red blood cells and considerable pus, yet without bacteria in ordinary stain, is very suggestive.

In the final analysis the diagnosis rests on the following studies:

1. *Complete physical examination* to determine the presence of other tuberculous lesions or foci in the body, especially the lungs. Frequently nodules may be felt in the epididymis and prostate. Also the examination of the kidney area by palpation and fist percussion to determine the presence of tenderness or renal enlargement.

2. *Cystoscopic examination.* This is the corner stone of diagnosis and offers the most important method of study both as to the lesions in the bladder and also with regard to renal localization and the determination of functional capacity. Cystoscopy is usually very difficult in these cases because of the great intolerance of the bladder and requires the most careful technic. Some form of efficient local anesthesia is required and an effort should be made to secure all the desired information at one sitting because the patient will very likely refuse another examination, if the first proves too painful. A preliminary course of treatment with sandalwood oil is advisable and frequently spinal or transsacral anesthesia may be needed. General anesthesia is not advisable. There is danger also of rupturing or puncturing these contracted ulcerated bladders and great care is necessary in the examination.

The bladder picture, while not specific of tuberculosis, is highly suggestive. The lesions are at first circumscribed in form and localization, being chiefly found on the mobile parts of the bladder. They consist of grayish to yellowish nodules in the mucosa which tend to group themselves near the ureteral orifice of the affected side. Later these become shallow ulcers with ragged edges. The ureteral orifice becomes infiltrated, surrounded by an area of hyperemia extending into the trigone. Late in the disease it appears gaping and resembles an open sewer hole, pouring out pus and surrounded by yellowish tubercles, the "golf hole" ureteral opening. The orifice may also be retracted, producing deformity of the trigone.

3. *Ureteral catheterization and examination of the urine for tubercle bacilli.* Most writers lay great stress on simultaneous catheterization of the ureters and an examination of the urine so obtained for tubercle bacilli. They also use this method to determine the condition of the healthy kidney by the various functional tests. On the other hand, it is pointed out that catheterization of the healthy ureter may be a dangerous procedure because of the transference of infection to a normal kidney. There is also a chance of error in ascribing to a healthy kidney tubercle bacilli that may have been carried up by the catheter in passage. This error can easily be guarded against, but the other danger seems more serious and in usual practice it is not necessary to catheterize the sound side, chromoureteroscopy taking the place of ureteral catheterization. However, if the changes in the bladder wall are slight, it probably is necessary to catheterize each kidney separately to be accurate in the diagnosis of

the side affected. Indigo carmine intravenously will greatly assist in localizing a difficult ureteral orifice.

The urine obtained is to be submitted to a thorough chemical, microscopic and bacteriologic examination and special search made for the tubercle bacillus. I do not believe confusion of the smegma bacillus with the tubercle bacillus is so likely as it is supposed and can be guarded against by careful technic. With a catheter in the ureter the separate functional activity of each kidney can be determined by the estimation of the elimination of 1 c.c. of phenolsulphonphthalein given intravenously, the urine being collected for fifteen minutes. This is normally about 15 per cent for one kidney.

4. *Functional kidney tests.* The two chief ones used are the phenolsulphonphthalein test and the use of indigo carmine to determine the renal output in the two sides. Ekehorn states his belief that functional tests in the ordinary case of renal tuberculosis are superfluous and that true renal insufficiency does not occur till very late in the healthy kidney. Also the functional capacity even in the presence of tuberculosis may not be much reduced. However, in other hands, notably by Thomas, the indigo carmine test gives the greatest assistance in diagnosis, the dye being given intravenously and the ureteral orifices observed by cystoscope simultaneously. Normally the dye will appear at the healthy ureteral outlet in three to five minutes and any delay beyond ten to fifteen minutes is decidedly pathologic. The dye is also given intravenously, the urine collected at stated intervals and examined by a colorimetric test to determine the percentage of elimination over different periods. The determination of the functional capacity of the kidney is of importance chiefly with regard to operative intervention and prognosis. It must be determined that a second kidney exists; that is not tuberculous and is capable of carrying on the work of both kidneys before any operation can be attempted.

5. *Guinea pig inoculation* with urinary sediment is advisable, when in suspicious cases tubercle bacilli can not be found in the urine. The length of time, six to eight weeks, required for a result is a disadvantage, though certain methods of carrying out the test may speed it up a bit and give valuable assistance in diagnosis.

6. *Radiography and pyelography.* X-raying of the kidney tract is necessary to eliminate the possibility of stone formation, though in an old tuberculosis calcareous deposits may simulate stone and

cause confusion. Pyelography though of value is considered contraindicated in the diagnosis of renal tuberculosis because of the dangers involved.

7. *Blood chemistry studies* are desirable to determine the nitrogen retention in the blood.

8. *Specific reactions* with tuberculin by subcutaneous injection of Koch's "O.T." have not proved of much value in the diagnosis and are really of little use except possibly in children. The diagnosis can usually be established by other methods at our disposal.

II. *Tuberculosis of the male genitalia.* Tuberculosis can attack any part of the male genitalia, the chief sites being the testicle, prostate and the seminal vesicles. As these are all intimately associated and disease in one part so likely to spread to others, I shall consider them as one from the view point of diagnosis. The testicle is the commonest seat of tuberculous infection and it manifests itself as tuberculosis of the epididymis, the testicle itself being involved only secondarily. The disease usually begins insidiously in young adults, aged 20-30, the chief characteristics being a nodular swelling of the testicle not particularly painful, but tender and sensitive. The enlargement on palpation is found confined to the epididymis, usually beginning in the globus major, and sooner or later the opposite epididymis is involved. The tumor may be obscured by associated hydrocele which it is advisable to aspirate to aid in diagnosis. Rectal examination may disclose involvement of the prostate and seminal vesicles. The disease usually progresses slowly and may be stationary at times. Eventually the nodules soften, become adherent to the skin and break down, discharging a thick, cheesy material. The fistulae resulting tend to persist, being slow to heal.

The acute form of the disease may be difficult to distinguish from gonorrheal epididymitis but usually there are other evidences of gonorrhea and it will subside under proper treatment or rapidly go on to pus formation. The infiltration following a gonorrheal epididymitis is usually in the tail of the organ, tuberculosis beginning in the head. Tuberculosis is essentially chronic and slowly progressing, tends to multiple sinus formation with adherent skin and is usually slightly tender.

*Luetic infection* is painless and usually attacks the testes rather than the epididymis and with gummatous formation the nodule is likely to be larger and denser than the tuberculous nodule before it breaks down. The syphilitic testicle is also very dense and feels heavy; a lead-like feeling.

The spermatic cord as a rule is not affected, as it is in tuberculosis. Gummata are likely to be unilateral, while tuberculosis is more often bilateral. Gummatus fistulae are quite rare and only seen in long neglected cases. The Wassermann reaction and the subcutaneous tuberculin test would greatly assist in the differential diagnosis, as would the therapeutic test. However, it is preferable to remove a gumma surgically than to delay too long in the removal of a malignant tumor which it may simulate.

*Tuberculosis of the prostate and seminal vesicles* usually go together and are frequently associated with tuberculosis of the epididymis. The diagnosis rests on the finding of irregular nodular growths in the site of the seminal vesicle or prostate and the evidence of tuberculosis in other locations, particularly the epididymis. These nodules tend to soften and produce fistulous tracts. There may be some frequency of micturition and urgency, especially if the prostate is chiefly affected. There may also be a terminal hematuria with slight meatal discharge and cloudy urine. Tubercle bacilli may be found in the discharge milked from the prostate. As the disease progresses the bladder is always involved and we have all the symptoms of tuberculous cystitis.

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### PRACTICAL EXAMINATION FOR RENAL INSUFFICIENCY\*

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The advances made in physiologic chemistry during the past few years have brought us much valuable information concerning pathologic physiology. The spinal fluid, gastric juice, blood and urine are routinely subjected to analysis, in health and disease, by laboratory workers.

Many important chemical procedures have been developed to aid the diagnostician in his work. Some of these tests require considerable time and no little technical skill to carry out. It has become a problem for the busy practitioner, who is not blessed with time or the advantages of a clinical laboratory, as to just what procedures and examinations will

prove the most practical and illuminative in a given case.

Among the most frequent diseases which he meets are those causing renal damage and lowered renal efficiency. It is highly important to determine the functional capacity of the kidneys and to ascertain if this is sufficient to handle the waste products which should pass through them. It is important for the internist to know the extent of renal impairment in order to formulate treatment and estimate the probable prognosis of the case. This knowledge is especially valuable also to the urologist.

The mortality following prostatectomy has been lowered from around 20 to 5 per cent with good operators during the past few years. This great advance in urologic surgery is not due to any special refinement in surgical technic, but to a careful selection of patients and to preliminary treatment to fit the patient for operation. Today no patient should be subjected to operation, who has had prostatic disease for any length of time, without a determination of kidney function.

The qualitative examination of the urine is of value in determining whether or not there is an active disease of the kidneys, but tells us nothing of the functional power of these organs, or the condition of the patient as a surgical risk. A kidney which is already working at its maximum capacity will not carry a patient through the additional load of an operation.

Many different tests have been brought forward which seek to estimate renal insufficiency. The fixation of gravity test, or the urine concentration test, was developed by Mosenthal in the diagnosis of nephritis. As originally introduced, this called for a careful measurement of fluid intake and the collection of urine samples at stated periods during twenty-four hours. The specific gravity is measured on these different samples and the chlorides and the total nitrogen estimated in each. The test is based upon the power of the normal kidneys to concentrate the night urine. Under the conditions of the test with normal kidneys, there should be nine points or over difference in specific gravity between the day and night urines. If there is less than nine points difference between the day and night urines, and the total nitrogen low, the kidneys are considered to be impaired.

The so-called chronic interstitial nephritis and the arteriosclerotic kidneys are the diseases in which we see this fixation of specific gravity. The shortcomings of this test are that it involves considerable

\* Read before Spokane County Medical Society, Spokane, Wash., Mar. 12, 1925.

time; it is not an accurate quantitative test of renal insufficiency; it does not reveal the kidney excretory capacity; nor is it adaptable to the determination of unilateral function. However, for the types of nephritis named it is a diagnostic aid of considerable importance.

#### FUNCTIONAL CAPACITY TESTS

These depend upon the introduction of foreign substances into the body and the determination of the rapidity with which the kidneys excrete them. Superficially this would appear to be the ideal method of determining renal functional capacity. The difficulty is that substances which will pass through the kidneys are not always excreted with equal facility. Neither are the normal urine constituents, such as the chlorides, phosphates, uric acid, urea and creatinin, excreted with the same uniformity or in the same proportions at all times by the healthy kidney. The ideal substance for a kidney functional test would be one that is nontoxic; that is not affected by passage through the body; that is excreted promptly by the kidneys with practically the same amount of energy that is used in excreting the normal urine constituents; and that is easily detected and estimated in the urine. We have no such perfect drug at the present time. Phenolsulphonaphthalein comes closest to filling the requirements.

Among those which have been used and which still have their adherents may be mentioned methylene-blue, introduced by Kutner. It is excreted by the bile, saliva and kidneys. The excretion is slow and uncertain through the kidneys. It is used very little in estimating kidney function at the present time.

Phloridzin has a strong advocate in Casper. This drug has the power of causing glycosuria when injected into the circulation. In cases of renal impairment, it is said, glycosuria is diminished or does not occur, depending upon the degree of involvement. Other workers have not confirmed Casper's reports, and state that the grade of glycosuria is variable even in normal persons.

Before the introduction of phenolsulphonaphthalein, indigo-carmin was the most popular injection material for the estimation of renal function. It was superior to methylene-blue but had the shortcoming of also being excreted by the liver. Furthermore, 75 per cent of it is destroyed in passage through the body. In patients in whom the renal function is low and the urine alkaline it is impossible to estimate it quantitatively with any accuracy.

From 15 to 20 per cent is excreted by the normal kidneys during the first hour after injection.

Phenolsulphonaphthalein is unquestionably the most widely used and the best of this line of drugs that we have at the present time. It is nontoxic; it is not affected by passage through the body; it is excreted entirely by the kidneys and is easily and quickly estimated in the urine. The normal kidneys excrete 40 to 60 per cent during the first hour and about 80 per cent in two hours after injection.

The second method of studying renal function is by the estimation of the excretion of the normal products of metabolism, either by estimating them in the individual as they are produced and retained, or by the introduction of these products and estimating their excretion. To this end various methods of estimating these substances in the blood have become necessary, opening up a field which is now briefly alluded to as blood chemistry. Variation in the normal blood content of substances excreted by the kidneys shows to what extent retention is occurring.

With regard to the protein metabolism, urine components, such as uric acid, urea and creatinin are not always excreted in the same proportions or with the same facility in different diseases. It is the retention of these substances which concerns us most in dealing with kidney disease. In our most common conditions of anuria from obstruction and nephritis, the urea of the blood rises first, then the uric acid, and shortly before death the creatinin accumulates. Consequently a rise of these bodies, or of the nonprotein nitrogen of the blood, reveals to the physician an existing renal insufficiency. This information is of vital importance in many cases. Where an operation is in prospect, it may mean a matter of life or death to the patient whether or not his kidneys have the necessary functional capacity to carry him through. This factor has been strikingly illustrated during the past ten years in our experience with prostatectomy.

When the physician does not have access to a hospital laboratory a substitute which is practical and conveys satisfactory information is that wherein the blood specimen is mailed to a laboratory for analysis. For certain patients a blood analysis is essential.

Nonprotein nitrogen, uric acid and creatinin require more complicated procedures to estimate and give very little more practical information than does the estimation of blood urea. Urea comprises about 30 to 40 per cent of the nitrogen of the total

nonprotein nitrogen of the blood; it is one of the chief constituents of the urine; it rises quickly in renal insufficiency and is therefore one of the most important indices we have in nephritis and anuria.

Marshall has worked out a simple method for the estimation of urea in the whole blood. The method consists of drawing 5 c.c. of blood, before the morning meal, into a graduated glass syringe. The blood is transferred to a clean test-tube containing an anticoagulant and sent to the laboratory.

#### PROCEDURE IN A GIVEN CASE

In a suspected case of renal insufficiency the following procedure is advised to obtain a good estimate of the function and reserve power of the kidneys:

1. Determine the urine concentrating power of the kidneys.
2. Determine the functional excretory power.
3. Determine if there is retention in the blood of substances normally excreted by the kidneys.

To determine the urine concentrating power the following modification of the concentration test is practical. Put the patient on a fixed diet for three to four days. This diet may consist of the foods which he eats customarily. The important thing is that they should be exactly the same foods each day and eaten in the same quantities during the days of the examination. Have the patient measure all the water he ordinarily drinks during twenty-four hours, and instruct him to drink only that amount on the succeeding days of the examination. He should carefully measure each twenty-four hour output of urine, and bring a morning and an evening specimen to the office each day. Carefully measure the specific gravity of each sample and average the morning and evening figures. This should give a good idea as to whether there is polyuria and fixation of specific gravity present, as is seen in chronic nephritis. In chronic nephritis the amount of urine is increased and the night urine often exceeds the day in quantity.

While this test is going on, measure the functional capacity of the kidneys with phenolsulphophthalein. Carry this out by intravenous injection of 1 c.c. containing 6 mg. The intravenous route is advised to avoid the uncertainties of poor circulation and the rate at which it is taken up by the blood, when it is injected intramuscularly or subcutaneously. Cardiac decompensation is a frequent cause for low phthalein readings, when it is given intramuscularly in these cases. The patient

should drink two to three glasses of water and empty the bladder. Give the phthalein and collect all the urine which is excreted in the next hour and ten minutes from the time of injection. Examine the urine for the amount of phthalein excreted. The result will determine whether the functional capacity is low or not.

It must be borne in mind that this test is only of the functional capacity of the kidneys. The fact that it is low, or near the lower normal limits, is no absolute assurance that the kidneys are or are not eliminating adequately the waste products which are brought to them by the blood. A 25 to 30 per cent phthalein in one person may indicate sufficient capacity to prevent retention of the urinary constituents, while a 30 to 40 per cent reading in another occurs with retention of the urine constituents. It should be remembered in this connection that a single normal kidney may excrete as much phthalein as two normal kidneys.

Addis has shown that an animal is able to exist on one-seventh of its kidney tissue. We have every reason to believe, therefore, that well over half the kidney parenchyma is gone before the phthalein output is lowered. However, where the phthalein output is 50 per cent or over in an hour, experience teaches that renal insufficiency is rarely present. A single low reading should always be confirmed by others before drawing definite conclusions.

To ascertain individual kidney capacity it is necessary to catheterize the ureters and collect specimens from each kidney. The catheters are inserted, urine for culture, microscopic and chemical analysis obtained from each side. The phthalein is then given intravenously. The urine is collected for from 15 to 30 minutes from the time of the first appearance of the phthalein in the urine. Any difference in the appearance time between the two sides should be noted.

If the phthalein test is below normal, renal insufficiency should be ruled out by estimating the blood urea. To do this draw exactly 5 c.c. of blood into a sterile glass test tube which has been drawn out over a flame into a narrow neck, and into which has been placed a couple of drops of 30 per cent potassium oxalate. Mix the blood well with the oxalate, add two to three drops of toluene and seal by heating the narrow portion of the tube and drawing out. This gives an hermetically sealed ampule for mailing to the nearest laboratory.

The result of these examinations will give a good idea of the present condition of the kidneys and of

their reserve power. If this is below par, the blood urea will show whether there is an accumulation of the urine constituents or not. All of this does not require a great deal of time, technical skill or equipment. It gives the physician a good idea of the extent of renal impairment, if it is present. It must of course be borne in mind that diseases such as gout, yellow atrophy, and diabetes necessitate more thorough laboratory tests than these. I have mentioned only those tests which I consider essential and practical for determining renal insufficiency as is seen in nephritis and urinary obstruction.

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## THE INLYING URETERAL CATHETER

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In certain disease entities of the urologic tract, where it is necessary to repeatedly catheterize the ureters, a great deal of discomfort to the patient can be avoided and greater therapeutic results obtained by the use of the inlying ureteral catheter. The inlying catheter in position for a few days may dislodge a ureteral calculus, allow a urinary fistula to heal, establish drainage of the renal pelvis, alleviate back pressure on the renal parenchyma, prevent ureteral occlusion following transplantation of the ureters, and mobilize the forces for attacking infectious processes in the urinary passages.

In chronic infections of the renal pelvis the renal parenchyma is usually more or less involved as well as the ureters and involvement of the bladder is often found. Here the inlying catheter finds its outstanding application. The two types of lesions that may be so successfully attacked by this method are pyelitis and certain cases of pyelonephritis. The role of foci of infection in the production of these diseases will not be discussed here. While the pathologic process is similar in pyelitis and pyelonephritis of certain types, the differentiation is really made on a clinical basis, the former being a mild temporary, the latter a severe chronic infection. Bacteriologic studies usually reveal the staphylococcus, colon bacillus or streptococcus. One will rarely obtain pathologic specimens for study of the pyelitis cases but pathologic examination of the pyelonephritis cases will show evidence of chronic inflammation involving the renal parenchyma, ureters and bladder.

Evidences of parenchymal involvement are shown by dilatations of the pelvis and calices which are

shown in the pyelogram, by the renal functional tests which may register below normal, and by determining the blood urea nitrogen, etc. The ureters will show an inflammatory exudate upon the mucosa and an infiltration of the mucosa, tunica propria and submucosa with leucocytes. Subsequently a sclerosis occurs, interfering with drainage by altering peristalsis and by constrictions and dilatations of the ureter and some of these changes may be shown by the ureteropyelogram. The urine of course will contain considerable pus.

Most remarkable therapeutic results are obtained by the insertion of one or more ureteral catheters which are allowed to remain in place for from one to four or five days or until they become occluded, in order that continuous or intermittent lavage of the pelvis can be carried out. First one side and then the other can be attacked if both be involved. If a concentrated lavage solution is used (and I believe that this is the best method), irrigation is carried on intermittently, while if a less strong lavage solution is used lavage may be more or less continuous, as suggested by Bumpus.<sup>1</sup>

The results of this therapeutic measure are best evaluated by taking cultures of the urine frequently. Let the results obtained determine the length of time the catheters are to be left in place. In two cases I have repeated this procedure at intervals. The cases which I have treated so have shown excellent results but it is too early to report end results.

Stones in the ureter are removed by other means than operation when possible. Bransford Lewis<sup>2</sup> first gave impetus to this rational view two decades ago, when he presented instruments for removal of ureteral calculi by cystoscopic methods.

Various methods have been used to facilitate voluntary passage of ureteral calculi, as injections of sterile oil, magnesium sulphate and procaine, the passage of single or multiple ureteral catheters; dilatations of the ureter by catheters, bougies or metal dilators; meatotomy of the ureteric orifice, etc. But we wish to mention the use of the inlying ureteral catheter for ureteral calculi. Not only will the catheter facilitate the passage of the calculus but also provide drainage and relieve back pressure, which is of especial importance when infection is present. If desired, the catheter may be allowed to remain in situ for several days. In this way the ureteral muscles may be relaxed, the ureter dilated, and edema lessened at the site of the calculus. The withdrawal of the catheter may play some part in

dislodging the stone. Andre,<sup>3</sup> Joseph and Janke,<sup>4</sup> and Beer and Hahn<sup>5</sup> have also used this method for ureteral calculi.

In urinary fistulae the inlying catheter will establish drainage in the proper direction and allow the wound of the pelvis or ureter to heal more readily. In certain cases of partial obstruction of the ureter, due to pressure from without, such as a gravid uterus when accompanied by infection, the pyelitis of pregnancy, the inlying catheter is indicated and is used with success. In operations for complete prostatic hypertrophy there is considerable danger of injuring the ureters, but this accident may be prevented by the use of the inlying ureteral catheters. In huge fibroids and other neoplasms of the uterus and ovaries the inlying catheter may occasionally be of service.

After transplantation of the ureter or ureters into the colon or into different portions of the bladder the inlying catheter will prevent collapse of the ureter due to edema and inflammatory reaction and thus establish drainage and relieve back pressure on the renal parenchyma. The ureters may be transplanted for exstrophy of the bladder, cancer of the bladder, cancer of the ureter, accidental severance of the ureter, and possibly in carcinoma of the prostate. Coffey<sup>6</sup> has recently used the inlying catheters after the transplantation of both ureters at one time for cancer of the bladder.

*Summary.* The inlying ureteral catheter is a valuable adjunct to our armamentarium for attacking disease processes of the renal pelvis, ureter and bladder.

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**Extraabdominal Conditions Simulating Acute Abdominal Diseases.** David Riesman (*Journal A. M. A.*, June 27, 1925), discusses those extraabdominal diseases which may simulate acute abdominal conditions, pneumonia, pleurisy, pericarditis, coronary thrombosis, rupture of a dissecting aneurysm of the aorta, true angina pectoris, tabes dorsalis, uremia, tonsillitis, lead poisoning, hysteria, diabetes, thyrotoxicosis, angiospasm of the abdominal arteries, the so-called erythema group of diseases and herpes zoster, not only for the purpose of discussing the intra-abdominal causes of acute abdominal symptoms, but to point out those extraabdominal conditions which, in their close mimicry of truly abdominal diseases, create diagnostic difficulties and lead to errors in judgment resulting in unwise and dangerous procedures.

## MULTIPLE SELF-INFLICTED FATAL WOUNDS

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There are few surgeons long in practice, who sooner or later have not been called upon to testify in a court of law and perhaps to give an opinion based upon their special training as to the effect of various types of wounds upon the vital organs. This opinion may be very far reaching in its effect and may indeed be the basis upon which the ends of justice are served. For this reason it must be well founded upon the facts of universal experience, taking into consideration the exceptions to general rules, since one authentic example of variation from the usual is ample proof that the exception may occur again at any time. Opinions should not be entirely based upon theoretical ideas which are the residuum of information carried over from student days. Information which is perhaps hazy and often inaccurate, but which, coming from a man trained in the science of medicine, even if not in the particular phase of it under consideration, has much authority with the nonprofessional persons who compose a jury.

It is sometimes astonishing how emphatically the medical witness will state that a wound of the heart or central nervous apparatus must have been immediately fatal. This is probably due to the fact that the exceptions to the general rule have escaped his observation. Among the most firmly grounded popular ideas is the belief that such wounds are fulminantly mortal, and that cessation of life in all its manifestations occurs immediately. This is commonly expressed in the phrases "stabbed to the heart," "blew out his brains" or "cut his jugular."

With the exception of the brain stem and basal ganglia, there is probably no structure of the body which cannot sustain the most gross injury without a continuation of life for varying periods of time, with the possibility of some action subsequent to the receipt of the injury. This fact is sometimes of the utmost importance in establishing whether multiple fatal wounds were self-inflicted or homicidal. The following case illustrates the point.

An important and influential man was found dead in his place of business, seated upright in a chair with his feet propped up in a natural position on another chair. His own automatic revolver was so firmly grasped in his right hand that the imprint of the trigger was ineffaceably fixed on the palmar surface of his thumb. The weapon had been held

upside down with the muzzle directed toward the body. There were two slightly powder stained, circular, penetrating wounds on the anterior surface of the thorax in the third left interspace. The coat had been held back by the left hand, the dorsal surface of the two distal joints of the four fingers being blood stained. The garment was not perforated, although the vest and shirt had been traversed by the missiles.

It was found at autopsy that both bullets had perforated the heart, one passing through the right ventricle and the other through the left ventricle, left auricle and making a slit in the aorta just above the base. The general direction was slightly downward and to the right. One ball had struck and splintered the ninth rib near the body of the vertebra and was found free in the right pleural sac. The other was removed from beneath the skin to the right of the midline at the level of the eighth thoracic vertebra.

It was contended that, owing to the nature of the wounds, they could not possibly have been self-inflicted, as either of them would have caused instantaneous death, rendering it impossible for the victim to have fired the second shot. It was further contended that the revolver had been placed in the hand by an unknown murderer, being finally fixed by rigor mortis. Several medical witnesses confirmed these arguments but after a long trial a verdict of suicide was returned, the verdict being due to the circumstances surrounding the discovery of the body and testimony to the effect that wounds of the heart are not always immediately fatal or destructive of consciousness.

The varying susceptibility of the tissues and organs to injury is well known, frequent instances of survival after seemingly impossible damage occurring. On the other hand, one is astonished at the rapidity of death from apparently trivial injuries. Most commonly immediate death follows wounds of the brain and upper cord, the heart or the great vascular trunks, and is due to disorganization of vital centers, shock or to hemorrhage. Ordinarily the fatal result is not so prompt from hemorrhage alone.

#### WOUNDS OF THE HEART

As a rule, wounds of the auricles are more quickly fatal than those of the ventricles and of the latter the right is the more vulnerable. In fifty per cent of cases of gunshot wounds of the heart the immediate effect is to produce unconsciousness and in some death is so sudden that it led Reidinger<sup>1</sup> to the remark: "They do not die; they are dead." One-third of the gunshot wounds of the heart are immediately fatal or within one hour after the injury (Matas<sup>2</sup>).

Makins,<sup>3</sup> in discussing a series of specimens showing wounds of the heart, concludes there is abundant proof that the heart can sustain very serious injury without causing immediate death. In only three of the twelve cases he describes did it occur. He also shows that perforating gunshot wounds of

considerable size of the ventricles may occur without serious hemorrhage into the pericardium. According to him, there is a more common escape from immediate death in these cases, than has usually been held to be the case. Fisher, who is quoted by Vibert,<sup>4</sup> found only 104 instances of immediate death in 452 cases of wounds of the heart. From the many instances of survival and activity after this type of wound, it suffices to mention only a few.

Makins<sup>3</sup> presents a drawing of a heart, showing excessive injury to the myocardium due to a bullet wound and he states that life was prolonged sufficiently to enable the victim, an aeroplane pilot, to bring his machine safely to a landing place. The same author mentions an instance of a perforating wound of the auricle, in which death did not occur until some time after the patient had been transported fifteen miles and operated upon. In another case a fragment of shell had traversed the right auricle and death did not occur until three days had passed.

Vibert<sup>4</sup> quotes the story of a man who, after receiving a perforating gunshot wound of the left ventricle, threw a lamp at his assailant, setting fire to the room. He then went into the courtyard, drew some water, carried it back in a bucket and put out the fire, after which he lay down on his bed and died.

Balsh<sup>5</sup> records a case in which a man ran a quarter of a mile and lived three days after having been shot through the right auricle by a .36 calibre bullet. In many of the instances of gunshot and stab wounds of the heart, in which there was time for surgical intervention, there has been retention of consciousness for varying periods of time, and often violent physical exertion, such as a struggle or flight, has followed receipt of the injury.

#### WOUNDS OF THE BRAIN

These are especially remarkable in often allowing a survival of several hours, days or even weeks, during which time the injured person may perform various acts and even pursue his occupation.

In a series of fifty-seven patients who had severe gunshot injuries of varying degree to the brain, twenty-one were sufficiently conscious to give an account of themselves after a period long enough to permit them to be transported to the hospital (Cushing<sup>6</sup>). In this group the wounds were penetrating, with projectiles as well as bone fragments lodged in the brain, and varied in size from tracts a few centimeters in depth to those which com-

pletely traversed the brain. In five of the patients who ultimately recovered, there was more than one cranial injury. Many of these men, after being wounded, walked or crawled some distance. There were instances in which fragments of bone or shell had been driven into the ventricle and yet the victim retained consciousness and was able to walk some distance.

Cushing<sup>6</sup> states that immediate fatality depends upon the size and direction of the missile and whether a large vessel is injured or not. Vibert<sup>4</sup> mentions an instance, where a man was seen to climb a ladder and walk more than half a mile before losing consciousness, after having received a wound of the head, in which the bullet traversed the entire left hemisphere of the brain, death occurring six days later.

Hall<sup>7</sup> cites a case of a man who had the anterior part of the right side of the brain destroyed by a .32 calibre bullet which lodged in the fourth ventricle. He lived eighty hours without loss of consciousness, performing various acts. These and the following cases show how a determined suicide might shoot himself in the brain and the heart and die from either wound.

#### WOUNDS OF THE SPINAL CORD

Incised and gunshot wounds between the occiput and atlas are almost instantly fatal and, when the cord is severely damaged above the fourth cervical vertebra, death is nearly immediate.

Sir William Thorburn,<sup>8</sup> in an article on gunshot wounds of the spinal cord, says: "That while usually accompanied by varying degrees of immediate disability, these wounds are not incompatible with prolongation of life and varying degrees of activity according to the level of the injury." He mentions instances of wounds of the cord as high as the fifth cervical segment, where life was prolonged some time with the possibility of some movement.

#### WOUNDS OF THE GREAT VASCULAR TRUNKS

These wounds are usually very rapidly fatal, but that there are exceptions to this general rule is also true. These occur in cases, where violent hemorrhage has been prevented by plugging of the wound by the missile, nearby organs or flaps. Among the instances of astonishing survival after such injuries are several mentioned by Makins<sup>3</sup>; one in which a bullet perforated the thoracic aorta, another in which there was an extensive wound of the aorta between the origin of the superior and inferior mesenteric arteries, death not occurring until

sixteen days later; a third in which a bullet made a large wound in the aorta two inches below the arch, the patient living for nineteen days; and finally one in which there was survival for thirty-seven days after a bullet had made a large rent in the thoracic aorta.

Tourdes<sup>20</sup> is quoted by Vibert<sup>4</sup> as having seen a case, where a man descended a flight of stairs and took several steps after division of the carotid artery.

I recall a man upon whom I operated two days after he had been wounded. A rifle ball had traversed his shoulder. Upon opening the wound I was astonished to see and feel the proximal end of the divided axillary artery thrust forward with each pulsation of the heart. While hemorrhage had been severe, it had not prevented him from walking some distance to a casualty station.

Several instances of survival after large wounds of the great venous trunks are reported. Tourdes<sup>20</sup> cites one, where a man lived ten minutes after a very large wound of the inferior vena cava. Makins<sup>3</sup> shows a drawing of a large transverse wound of the inferior vena cava, in which death did not occur for thirty hours. These instances show that it is possible to retain mental and physical powers for a certain time, even after the receipt of a mortal injury, so that the victim can perform certain acts requiring more or less prolonged effort. It can, then, be seen how it would be possible under similar circumstances for a person to inflict a fatal injury upon his body and afterward to deliberately wound the same or another vital structure by a second effort.

#### MULTIPLICITY OF WOUNDS

Roswell Park<sup>9</sup> states that the coexistence of several wounds constitutes almost conclusive evidence of murder and that it is hardly conceivable that a suicide could shoot himself through the heart and through the brain. Another more recent authority remarks that two fatal wounds, either of which might be rapidly fatal, would speak against suicide, especially if it could be proved that the first one caused disability or unconsciousness (Peterson, Haines and Webster<sup>10</sup>).

With the perfection of the modern repeating weapon, the possibility of self-infliction of more than one fatal wound is great. When the automatism, under which a person bent on self-destruction acts, is also considered, it can be seen that this possibility is even more augmented. Schutz,<sup>11</sup> in commenting upon the difficulty in determining the origin of mul-

tiple wounds, says that a person can prepare for suicide with exceptional tenacity and reflection and by various circumstances, even to the infliction of more than one wound, so set the scene as to make it appear murder.

The persistent determination of some would-be suicides is often remarkable. While attached to the City Hospital in St. Louis some years ago, I saw a man who had attempted to destroy his life, by driving a ten-penny nail into his head. He had stood before a mirror and, starting the nail into the midline of the vertex, had completely driven it in with a hammer so that the brain was penetrated to the ventricle. Several bruised spots on the scalp about the buried nail head testified to his determination to complete the act in spite of its difficulties.

Reynes<sup>12</sup> reports a similar instance, in which a man drove two nails through his skull into the brain with a stone. Morrow<sup>13</sup> cites a very interesting instance, in which a man drove a nail through the skull on three different occasions and finally succeeded in destroying himself in this unusual manner. Many instances of this determination are reported. Merrem<sup>14</sup> cites the case of a soldier who suicided by inflicting blows on his head, strangling himself and drowning. O'Hara<sup>15</sup> tells of a man who cut his throat and then inflicted eleven wounds in his left thorax. May<sup>16</sup> reports the case of a man who inflicted sixteen wounds on his head with a hatchet and then cut his throat. Peterson, Haynes and Webster<sup>10</sup> note an instance of a man dead as a result of thirty wounds of the head, self-inflicted with a cleaver.

The following instances of suicide by multiple fatal wounds in addition to the one herewith reported are noted:

1. A dentist who fired two shots into his brain. The first one stunned him. After a brief period he regained the power to fire the second, the ball traversing the insula, striatum, capsule, lateral ventricles and the callosum. The existence of two bullet wounds gave ground for a suspicion of foul play, but documents in the hand writing of the deceased established the suicidal intent beyond a doubt (Wilder<sup>17</sup>).

2. A man who killed himself by firing three shots into his body. The first one fractured the skull in the right frontoparietal region. The second entered the right temporal region, penetrated the meninges and traversed the brain in a straight line through the frontal lobes. The third bullet entered

the fifth intercostal space, traversed the pericardium and the heart. Lattes,<sup>18</sup> who reports the case, decided that after the thoracic wound had been inflicted he fired at his head.

Schwarzacher<sup>19</sup> cites three cases. In the first a woman shot herself three times with a repeating revolver. Two of the wounds were capable of being fatal. The second instance was that of a man who shot himself through the head, the bullet traversing the brain through the bases of the temporal lobes. Then three bullets were fired into the left thorax. The left ventricle was torn by one, the right ventricle was opened by another, and the third passed diagonally through the left lung. Schwarzacher thought that the head wound was the first inflicted. In the third instance, that of a woman who died as a result of three gunshot wounds which she had made in her left thorax, one bullet pierced the left auricle and pulmonary vein, another opened the right ventricle and penetrated the inferior vena cava, while the third grazed the left lung.

#### SUMMARY

From the fact that survival with retention of consciousness for varying periods is possible after the receipt of single wounds of vital structures, it is reasonable to conclude that the victim would have been able in these instances to inflict a second or more wounds upon the same or other vital structures.

The modern repeating firearm and the automaton under which a person determined to end his life acts would further account for the possibility.

While it is true that multiple wounds usually point to murder, it must not be forgotten that there are well authenticated instances, in which death has been due to self-inflicted multiple wounds of one or more vital organs.

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## LYMPHOSARCOMA OF THE APPENDIX AND CECUM

C. E. HAGYARD, M.D., F.A.C.S.

SEATTLE, WASH.

Sarcoma occurring in the intestines is a highly malignant and fatal condition. Fortunately, it is rather rare. In a recent review Goldstein collected but 130 cases. In Prague, in 13,036 sections in fifteen years, there were but 13 cases. Johnson and White collected 22 cases of primary sarcoma of the colon.

These growths may be located in any part of the intestinal tract but occur most frequently in the ileum and rectum. Krieger and Nothnagel report on the location of 37 cases as follows: Small intestines 24, cecum 5, rectum 17.

*Pathology.* Speese' classification as to type is as follows:

Lymphosarcoma .....	34
Round-Celled .....	43
Spindle-Celled .....	13
Fibrosarcoma .....	3
Myxosarcoma .....	2
Myosarcoma .....	2
Mixed Type .....	3

Lymphosarcoma is the most common type found and probably some of the above, classified round-

celled, belong to this group. Ewing described the pathology of lymphosarcoma as follows:

"Lymphosarcoma of the intestine is an important type of the disease. While usually found in the lower ileum, it may appear at any point from the duodenum to the anus. The rectal tumors are less frequent, but equally characteristic (Glinski, Key Lit). Rarely, the appendix is the primary site. The earliest stages appear as a localized thickening of the submucosa with or without ulceration. The process extends laterally and invades and destroys the muscular layers and appears as a subserous tumor which soon forms adhesions. Thereafter, central ulceration excavates the tissue or produces aneurysmal dilatation which, with peripheral growth, yields a large tumor with roomy cavity. Large polypoid growths protruding into widened lumen without ulceration are also observed (Baltzer). Rarely, marked stenosis results and perforation may occur. Chronic peritonitis with chylus ascites is often observed.

Metastases appear early in regional nodes and they may extend to many of the organs (Libman). The disease often occurs in childhood as well as at other ages and usually runs a rapid course, terminating fatally in a few weeks or months. Acute cases resemble appendicitis (Libman, Jopson and White).

The structure of the growths is that of small or large round-cell lymphosarcoma. The reported cases are variously designated, but there is no satisfactory evidence that more than one type of tumor is represented in this group. The cells are large or medium mononuclears with liberal cytoplasm, lying irregularly in a meshwork of fine fibrils. Fragile blood vessels and many small lymphocytes may accompany the tumor cells. It is especially in this group of cases that the process may resemble an infectious granuloma."

Von Esmond in his clinic found 60 per cent occurred in syphilitics.

*Symptoms.* (Baltzer.) The symptoms are very slight at the onset. There is at first pain in the stomach, loss of appetite, nausea, vomiting; the bowels are irregular, being either constipated or loose. The abdomen soon becomes distended. When seen early, all the patients are very thin and have a pale color. A tumor is generally found, although it may be missed for a long time; it may be located in any part of the abdomen, and it is generally but slightly or not at all tender. The temperature is

normal or moderately elevated. In some cases there is a leucocytosis.

Similarity to appendicitis has been noted by Libman and others.

*Duration.* The duration of the disease varies widely. Birch-Hirshfield observed an intestinal case following typhoid fever which was fatal in six weeks. Kaufman refers to a mediastinal tumor which caused suffocation after three months. Libman's cases resembling appendicitis were very rapidly fatal. The usual course is progressive and fatal within a few months. Wide extensions are observed, chiefly with more prolonged course. After local treatment, extirpation, internal use of arsenic, or application of x-ray, the disease has often appeared to be arrested only to recur after a brief period. Yet not a few cases have been reported as cured (Chiari). The true nature of some of these older cases is uncertain, but Ruff has collected a series of more recent reports, illustrating the regression of lymphosarcoma after infectious diseases and irradiation. Koscher reports regression of a tonsillar growth after removal of a portion of tissue for diagnosis, followed by a recurrence in the abdomen. Longcope reports the complete spontaneous disappearance of extensive lymphosarcomatous tumors, followed by death of the patient by asthenia.

#### CASE REPORT

D. H. D. Male, aged 33, clerk, married. Family history negative. Patient had asthma as a child and has never been robust. Otherwise negative except the abdominal history following.

In September, 1920, he consulted Dr. Sanders of Bremerton for abdominal pain and gave the following history:

For the past ten years he has had attacks of abdominal pain. Early these occurred about once in three or four months but in the past three years at shorter intervals. Pain usually appeared suddenly in the form of general abdominal cramps, lasting about twelve hours. Occasionally vomited. He usually took physic which gave relief, but remained sore in the lower right side for several days. No diarrhea.

**Present Attack**—Unusually severe cramps for the past three days, nausea, constipation. Temperature 99.6°. Leucocytes 11,000. Definite local tenderness and rigidity at McBurney's point.

A diagnosis of recurrent appendicitis was made and operation performed. Operation disclosed a moderately thickened appendix, at the base of which was a dark red mass about the size of a large walnut. The mass, with appendix and a portion of the cecum, was resected.

The tumor was rather firm, dark brown and vascular. It was reported by the pathologist as not malignant, and probably inflammatory tissue or a granuloma.

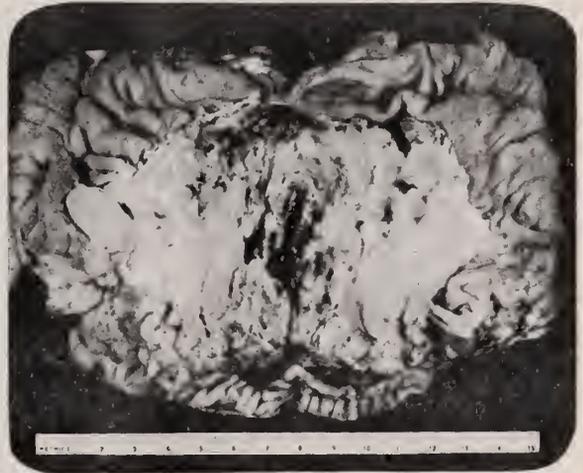
The patient was free from trouble and gained in health for some months. On May 3, 1921, he consulted me again. For about three months he had been having increasing trouble, loss of appetite, bloat-

ing, severe constipation, cramps in the abdomen, increased by eating. Pain soon became constant and prevented sleep. Very constipated and got results only with enemas. Has become very weak and has lost twenty pounds in the past month.

Examination shows a thin, weak and anemic man. Weight 139 (159 pounds one month ago). Temperature normal. Systolic blood pressure is 132, diastolic 104. Reflexes normal. Chest negative.

Abdomen moderately enteroptotic and distended. A definite, firm, rather irregular and moderately tender mass can be felt in the cecal region. X-ray examination is negative except for a large filling defect in the lower and inner aspect of the cecum, corresponding to the palpable mass. The cecum is fixed and the ileum is distended.

Gastric analysis showed a free HCl of 45 and a total acidity of 60. The urine is negative. Red blood count 4,200,000. White count, 10,000. Feces negative. Wassermann negative.



Lymphosarcoma of cecum.

**Diagnosis**—A diagnosis of recurrent tumor of the cecum was made and operation performed.

Operation revealed a tumor the size of a man's fist, apparently growing from the posterior wall of the cecum, forward and inward, until the anterior wall of the cecum and the terminal ileum are drawn tightly over it, causing partial obstruction. The mass was rather firmly fixed to the posterior abdominal wall. After some considerable but unsuccessful efforts to free the mass, I gave it up. I concluded that we were dealing with a recurring malignant condition that involved the retrocecal structures, and that it was not feasible to remove it. I, therefore, did an ileocolostomy to overcome the obstruction. After doing this, I made another attempt to free the tumor and eventually succeeded in mobilizing it and bringing it out on the abdominal wall, after the method of Mikulicz. After some days I divided the colon and the terminal ileum several inches from the growth.

Examination of the mass showed it to be a rather firm but vascular tumor, apparently growing from the submucosa of the posterior wall of the cecum. It was not ulcerated. The laboratory returned a report of lymphosarcoma.

The tumor, as can be seen in the illustration, was obviously a neoplasm and corresponds very accurately to Ewing's description of lymphosarcoma, having indefinite stroma, is very cellular and vascular, and has a tendency to central softening and ulceration. Clinically, the early recurrence, rapid growth and marked cachexia support the diagnosis.

Sarcoma of the appendix is even more rare than that of the cecum. Kelly and Hurdon report the following cases which, being similar to this one, I add to the report:

1. J. C. Warren (*Bost. Med. and Surg. Jour.*, 1898, vol. 138, p. 177). A boy, six years old, entered the hospital with a history of a month's illness occasioned by what was supposed to be a chronic appendicitis, characterized by intermittent pain in the appendiceal region and slight fever. On admission there was a small tumor at McBurney's point. He was kept under observation for ten days, during which the subjective symptoms subsided, but the tumor remained. Operation showed a new-growth in the ileocecal angle, instead of a suppurative inflammation, the surrounding parts being more or less glued together. The mass proved to consist of the greatly enlarged glands, going back to the root of the mesentery. A piece excised for examination showed round-cell sarcoma. The cecum, with part of the ileum and corresponding part of the mesentery, was then excised and the intestine anastomosed with a Murphy button. Complete recovery followed, and a personal communication in 1902, four years after operation, stated that the boy was enjoying excellent health, with no evidence of recurrence.

2. P. Paterson (*Practitioner*, 1903, p. 55). A man, thirty-nine years old, gave a history of uneasiness in the right iliac fossa for three months, with occasional attacks of sharp pain, lasting for several days. His bowels were constipated during the acute attacks, but otherwise normal; he had never had any vomiting. When first seen, the patient was suffering from an acute attack, characterized by severe pain in the right iliac fossa, nausea and anorexia. His temperature was 100.8° F., his pulse 100. Palpation revealed a distinct, tender mass in the right iliac fossa.

On operation, the appendix was found much thickened, firm and bound down by adhesions posteriorly, while the omentum was attached to its apex. The cecum was also thickened for a radius of about one-fourth of an inch around the attachment of the appendix. The appendix, together with the thickened part of the cecum was removed, and the opening closed. The patient never rallied from the operation and died six hours later. Postmortem examination failed to show any trace of tumor formation elsewhere, and the part of the cecum that remained in situ appeared healthy. The appendix was 16.5 cm. long and 10 cm. in its greatest circumference. The growth had apparently begun near the apex of the appendix and extended toward the cecum, which was only slightly infiltrated. Histologic examination showed a round-cell sarcoma, infiltrating all the coats with the exception of the peritoneum.

3. A. C. Bernays, 1902 (Personal communication). A woman, twenty-nine years old, with a good family history, and both parents living, had been in good health up to one year before her illness. She then began to have periodical attacks of pain in the right side of the abdomen, and was referred to Bernays with a diagnosis of appendicitis. A hard tumor could then be plainly felt. Operation was deferred for a few days, because, although the hard tumor was what might have been expected after an acute attack of appendicitis, the temperature was normal. On opening the abdomen, the appendix was found free in the peritoneal cavity; it was 10 cm. long, and apparently normal in its distal half, but in its proximal portion it was greatly enlarged and firm to the touch, the infiltration involving the adjacent wall of the cecum for a short distance on one side. A complete excision of the cecum was made, and the patient made an excellent recovery.

Histologic examination showed a typical round-cell

sarcoma infiltrating all the layers of the appendix. The cells, which were fairly regular in size and in their staining properties, showed very active nuclear division. The distal portion of the appendix was normal. I have not had an opportunity to examine the wall of the cecum beyond the growth. A note just received from Bernays states that now, September, 1904, two years after the operation, a tumor is again present in the abdomen, which is probably a recurrent growth.

## ACTINOMYCOSIS OF THE NASOPHARYNX AND SOFT PALATE

G. W. MONTGOMERY, M.D.

CALDWELL, IDA.

The recent publication of a case of actinomycosis of the kidney suggests the report of the following case.

The patient is a girl, twelve years of age, American, white, farmer's daughter. The mother gives a history of pulmonary tuberculosis fifteen years ago. The girl has never been very rugged but has had no definite ailment until November, 1924, when the submaxillary glands on the left side became swollen and tender. A doctor was not consulted at this time and the glands subsided after several weeks. According to the mother, however, the patient seemed to have lost strength and the skin and sclera were yellowish in appearance.

In March, 1925, the submaxillary glands again became greatly enlarged on both sides and I was consulted at that time. On account of the mother's history of pulmonary tuberculosis, tuberculous glands were suspected. An examination of the mouth revealed a small yellow nodule on the soft palate and another just behind the uvula on the pharyngeal wall. The nodule on the palate was punctured, characteristic granules were expressed and a stained specimen showed the ray fungus of actinomycosis.

**Treatment and Results:** The postules were freely opened, drained and cauterized with copper sulphate crystals, care being taken to insert the copper sulphate to the bottom of two sinuses in the palate which penetrated the nasal cavity on the left side. Iodide of potassium, by mouth was crowded to the point of saturation, a week's rest, then the K. I. repeated. A half of one per cent copper sulphate solution was used by the patient at home as a nasal douche.

Improvement was rapid. The patient was seen twice a week at the office and the sinuses kept healing from the bottom. At the present writing they are completely healed, the glands of the neck can scarcely be palpated, the icteric appearance of the skin and sclera has disappeared and the girl has gained seven pounds in weight.

The prognosis in this case may not be as comforting as it seems. It is very difficult to surmise whether or not there may be lesions in the gastrointestinal tract as well as in the mouth. The child no doubt became infected from swallowing some infected material. As the disease is very indolent, it may appear later as a case of gastrointestinal or kidney infection. At least these are cases that will bear watching for years to come.

## GOODFELLOWSHIP\*

W. H. HECKMAN, M.D.

CENTRAL POINT, ORE.

The man who has no friendly word for his fellow practitioner deserves no friendship from the medical profession. Can you expect the laity to respect us when we have nothing but censure and jealousies and malice for each other? It is not so bad now, but the time was when, if a doctor did not belittle his brother in the medical profession, when occasion presented, the people were disappointed.

There is yet too much of this underhanded work. "If you had called me first I might have saved your baby. It is too late now." "If I had been just a few hours later your child would have died." "He nearly had pneumonia, but you called me just in time to save him!" How frequently do we hear just such expressions even in this enlightened age.

Do not impress your patients with your superiority. Do not try to impress them with your brother practitioner's inferiority. The deceit may work for awhile, but you are injuring yourself as well as the profession. "Did he leave a piece of afterbirth in the womb? It's a wonder she didn't die." Again you are stabbing some good man in the back, and lowering the standard of the medical profession.

Be always ready to say something good of the other fellow. If your patients say that they wouldn't have a certain doctor to treat a dog or cat, say to them: "He wouldn't want to treat your dog or cat." Say to them: "I always found him a mighty fine man." If we follow up this advice it will be but a short time until the medical profession will be held in very much higher esteem by the general public. It is not the general public that first injures our standard, but what we say about each other which raises or lowers our standard in the minds of the laity.

We are dependent upon each other. Our happiness is in a large measure dependent upon one another. Money is not all. Most of us act as though the world would come to an end if we didn't grasp every nickel in sight. Money cannot buy life's best things. These are our friends, our ability to make people happy, to get under the "under dog" and lift him up, to be grateful and show our gratitude for the many good things our friends bestow upon us.

If we let the slights and criticisms dig in, if we cherish the insults, ingratitude and wrongs, we can soon cover our souls with a mass of nettles. Hostilities and ingratitude are everywhere; innumerable rankling grudges infest the mind. How many people are habitually peeved, nettled, miffed, provoked, irritated and incensed. This collecting of grudges shrivels the soul, hinders our progress, injures our morals, and this vindictiveness makes ourselves the slaves of our enemies. Characters in other respects spacious and admirable often fail before this test of big-heartedness.

Stanton called Lincoln a "low cunning clown," nicknamed him the "original gorilla," said De Chailleu was a fool to wander all the way to Africa in search for what he could so easily have found at Springfield, Ill. Then Lincoln, who knew well what Stanton said, made him Secretary of War, because he was the best man for the place. Years afterward that the same Stanton stood at the bedside of the martyred president in the little room across the street from Ford's Theatre and, looking at the silent face, said: "There lies the greatest ruler of men the world has even seen."

A large part of Lincoln's hold on our affections is due to his forgiving spirit. On another occasion he said: "You have more of that feeling of personal resentment than I have. Perhaps I have too little of it, but I never thought it paid."

The doctor who does not collect grudges is a better man than he who does, and whenever we meet a character that does not indulge in resentment, we recognize moral greatness. Without this vindictiveness our lives are sweet, happy and contented. We mount one step higher in the scale of character. It is hard to be a good loser. The quality of sportsmanship which can see another man walk off with the prize and still can praise the very excellence by which we are surpassed is none too frequent. What if they do change doctors? We must expect that. Instead of showing our jealousy, our vindictiveness, how much more charming our attitude if we show no prejudice but try to hold the friendship of those who dismissed us, and cultivate more zealously the friendship of the rival doctor.

The lack of this big-hearted spirit is the cause of many rancorous ills. Yet what fools we are to let this vice steal from us, as it always does, our independence, our happiness and our usefulness. We make ourselves the slaves of all whom we envy. Their superiority does not harm us, but our jealousy does. To care about the welfare of man-

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kind supremely, to be glad of any chance to help our brother doctors, such big heartedness is both good sense and good Christianity.

Friendship is the fundamental need of the world. No man is the whole of himself; his friends are the rest of him. Indeed, whenever in history high character and great achievement appear, there friendship is at the fountainhead of the successful life. All great living is nourished and sustained by inner friendships, and is unimaginable without them. But friendship is never adequately understood, if it is made merely a matter of congenial intimacies. Friendship is an expansive spirit, that overflows vindictiveness, too great and too glad to be stopped by prejudice. Such big-hearted friendship is an elemental test of character. Such undiscourageable good will is the indispensable foundation that will make us all better men and better doctors.

In our daily intercourse with our fellowmen we must be full of something. Why should it not be light instead of darkness, smiles instead of frowns? Happiness shines clear through a body from head to foot, gladdens the skin and mucous membranes and all the organs between them, even to the bones themselves. So does hope, so does love, so does trust, and all other healthful emotions that make human beings companionable and loveable.

Shadows likewise permeate the tissues; and grief, despair, disappointments and the rest of the gloomy horde of depressing influences that sicken souls exercise a depressing influence upon every organ that is struggling to maintain or regain its equilibrium. We all know that happy thoughts and feelings conduce to a good appetite, aid digestion and stimulate the blood current upon which all functional activities of the body depend. We know that unhappy thoughts and feelings have just the opposite effect, and injure the appetite, impair digestion, and start congestion in various parts of the body.

Ill temper can be cured by the cultivation of its opposite, namely, kindness; and this is to be acquired not by attacking the ill temper but by establishing kindness. As tears are contagious, so is hope; as anxiety and care are contagious, so are trust and faith; as disease is contagious, so is health. We all know that light will scatter darkness, that love will cure vice of all kinds. We also know that hatred, malice, covetousness, fear and jealousy are all so harmful to bodily tissues that we are well aware what sad havoc they play with the bodily functions and tissue products.

Let us, then, disarm people of their fear of death, also of their fear of life, and inspire them

with courage to interpret all the experiences they are called upon to pass through as benedictions for their betterment. Let us remember that cheerfulness is a jewel that never grows dim or old. Let us throw off the spell of prejudice and professional animosity that has filled our previous history with such unhappy pages, and become imbued with a broad spirit of philanthropy and good will to fellow men. Let us cease having rivals and accept our brother doctors as colaborers. Let us stop feeling elated and interpreting to our advantage the mistakes and failures of brother practitioners, and when we learn of their defeats, assume it as a call to rush to their assistance and to hold up their hands and put them on their feet again to the extent of our ability.

We cannot always see things alike, but we must respect the human privilege of individual choice and judgment and under all circumstances be gentlemen, full of kindness and good will towards everybody about us, and especially our brother doctors. We need more of the spirit of generosity, a spirit of appreciation that will make us love and serve each other better, and so serve this organization to which we belong and increase its efficiency. Our burdens are all heavy and we need each other's help.

Let the good work that we have been inaugurating here for the last three years go on until our interests and successes are common, and we realize that what is good for each one is good for all of us, and what is good for all is good for each of us. Let us spread the contagion of happiness, health and kinship. Let us set the pace of good-fellowship for the entire profession and, as light can scatter darkness, as health can cure disease, so can kindness annihilate malice.

A revolution in the lives and practices of doctors has taken place. Bigotry, intolerance and all other forms of selfish propensities that rankle in the bosoms of medical men are struggling in their death agony, and the present day is marked by a higher and purer grade of medical excellence than the world has ever known before. Quarreling, bickering, hatred and jealousy are gasping their last, and a reign of peace, harmony, tolerance and good will to brother doctors is being rapidly ushered in. When the human closets are opened, things which puzzle us now will be very surprisingly cleared up. Of one thing we can be assured, that health is natural, goodness is natural; love, hope, trust and optimism are natural, while the opposite of these and their consequences are both unnatural and unnecessary.

# NORTHWEST MEDICINE

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## EDITORIAL

### YOUR PART IN NATIONAL DEFENSE

We are all agreed that we wish no more wars for this country. At the present time the United States is perhaps the greatest world factor for peace and for the prevention of war among the nations. In the opinion of our wisest and most far-seeing statesmen, preparedness is the most vital factor in the promotion of peace. This condition of preparedness is established in our National Defense policy which has become a concrete, stabilized institution. This is based upon a small standing army, a fair sized National Guard and a large organized reserve force. It is evident that the bulk of responsibility will fall upon the organized reserves, not only in supplying numbers but in training the third line of defense, that is, all available manpower, the unorganized forces.

All who have made a study of this subject agree that this policy is a good one. It will be in force, probably with modifications, for many years in the future. Its structure must, therefore, be thorough, with preparation for the coming years as well as the present time. A very important factor in carrying out this plan of organization will be the Medical Reserve Corps, which must bear its share of responsibility. The individual physician will best perform his part in this plan of procedure by accepting a commission, taking the correspondence courses and attending training camps when possible. It has been announced that there is a pressing need for the enrollment of physicians under forty years of age, in order that they may remain as members of the reserve for a satisfactory period of years. Many more doctors must enroll than are now members of the reserve corps.

The Ninth Corps Area must enroll two thousand medical officers in its nondivisional group. The states of Oregon, Washington, Idaho and Montana are included in this area. If the organization is by geographical location for definite units, it is obvious that unit esprit will be better, personnel can be more accurately assigned to the duties for which best fitted and better opportunities afforded to attempt some degree of mobilization from time

to time, even if it be nothing more than conferences on pertinent problems of the organization.

The same principles as to allotment of officers, and the enrollment of membership applies to all of the four states with which we are concerned. In order to specify some of the details which are to be considered, certain facts will be presented regarding the requirements for Washington, with the understanding that they apply equally to the other three states.

The allotment for this state will be approximately two hundred and fifty officers. The requirements for organizations in different parts of the state can be illustrated by what is applicable to Seattle. There are two nondivisional organizations in this city at present, namely, General Hospital No. 50, Col. J. B. Eagleson commanding, and Station Hospital No. 147, Lieut. Col. F. P. Gardner commanding, with seven vacancies. More organizations are to be instituted promptly but these first allocations should first be filled. There are other stations, general, evacuation and mobile surgical hospitals to be organized as soon as personnel becomes available for assignment. Either of the above officers will recruit for his own organization, or application may be made to 96th Division Headquarters in City-County building, or to the surgeon at Ft. Lawton or Camp Lewis. Details similar to these might be specified regarding the enrollment in Portland, Tacoma, Spokane, Boise, Helena and other Headquarters cities in these states.

The opportunity for promotions is a matter of small concern in peace time but very important in time of war. The officer in the reserve at the present time, taking the correspondence courses, attending a reserve camp if possible, will be the man most prominently in line for promotion. He who gives no time to the Reserve in peace time will deserve none of the higher grades, and promotion will come to him who has given time and thought to this service. As the details of this new organization are unfolded, the medical profession will be astounded at its magnitude.

### DIAGNOSIS BY THE COURT

"Let the shoemaker stick to his last." This is a homely method of expressing the truth that one who is an expert along certain lines becomes an authority in that sphere, while if he attempts exercising a similar attitude in matters concerning which he has not devoted an adequate period of study, he will probably muddle things with resulting

confusion and dissatisfaction. This situation is illustrated in the court rulings of some of our states relative to industrial insurance compensations. A case in point is the condition in the state of Washington in regard to claims presented to the Industrial Insurance Commission for compensation for disability resulting from traumatic hernia and traumatic appendicitis.

A short time ago a superior court judge ruled that a claimant was entitled to compensation for traumatic hernia. Following this decision the commission was deluged with claims for this sort of injury, as many as forty or fifty such being presented in a single month. Since the commission, following this court precedent, has awarded compensation for certain of these claims, the number has continued to increase from month to month. It seems axiomatic that a claim of this sort should be determined on the basis of medical authorities rather than the conception of the presiding judge. In the first place, it is stated that one in every thirty males has an inguinal hernia. It is universally recognized that the all-important cause of hernia is the presence of a preformed sac of peritoneum, the processus vaginalis which is a congenital condition.

Surgical authorities universally deny the existence of traumatic hernia except under extraordinary conditions. Moorhead never saw a genuine traumatic hernia due to nonpenetrating accident. Bull and Coley, at the Ruptured and Crippled Hospital of New York, investigated ten thousand cases, in only two of which did trauma have any bearing, one of these having been gored by a bull. Sellenings, of the New York State Compensation Board, says traumatic hernia is a surgical curiosity and assumes no practical importance. MacCready, an English authority on hernia, states an acquired hernia is never due to an accident. Similar authorities could be quoted to great length, all unanimous in the same opinion.

A similar situation exists in Washington regarding traumatic appendicitis. Some time ago, in the "Ruth Clark" case, the court decided that appendicitis was due to injury. An epidemic of traumatic appendicitis ensued, as many as four claims a day having been received for this form of injury. Among all surgical authorities relative to this form of injury, its existence is considered a surgical curiosity. Moorhead never saw a case and knows of no form of external violence capable of producing it in an appendix. Sprengel says there is no recorded case

of scientifically proved traumatic appendicitis, and Deaver is of the same opinion. If external violence is to be the exciting factor, the trauma must be over the appendiceal region, onset of symptoms must be prompt, the attack must be the first that ever occurred, there must be no history of previous indigestion, colic, etc., at operation the appendix should be found acutely inflamed and pathologically there should be no indications of former diseased process. It is obvious that an accumulation of such conditions would scarcely exist. In addition to these fanciful traumatic conditions, claims have been presented, based on trauma as a cause of gastric ulcer, Bright's disease, typhoid fever and intestinal influenza. Thus far compensation has not been allowed on this group of ridiculous claims of injury.

No industrial insurance board will refuse to allow compensation for an injury justly acquired in industry, but the injustice of granting compensation in the above cited cases is perfectly obvious. No honest, conscientious physician would support claims for such traumatic curiosities, in the face of unanimous adverse surgical opinions from recognized authorities. Since legal decisions are so largely based on precedent, the result of the court's action in cases such as cited above, has a far-reaching effect. Every reader of these lines is concerned in the matter, since the financial burden is ultimately born by every citizen. The appeal herein presented is that the individual physician should recognize the facts established by the experiences of surgeons in all parts of our land and recorded in medical literature, and that the court should be guided by the opinions of leading surgeons in these traumatic conditions, especially where unanimity of statements assures accuracy of their views.

#### PROMOTION OF CLEAN ADVERTISING

That advertising in the newspapers is conducted on an entirely different basis from that of a decade or more ago is evident to every reader of the daily press and magazines. To a large extent advertising of quack medicines, fake cures and false statements regarding remedies and manufactured articles has been eliminated from the most responsible and high class publications. These results have been obtained through several factors. The general public is becoming informed as to the necessity of accurate diagnosis before treatment of disease, and appreciate the fact that the best results in illness are obtained through scientific diagnosis and treatment. Newspapers and magazines have learned that honesty is the best policy in their business

as in all others, and that a reputation for carrying out such a policy is profitable in many ways.

At the same time certain papers and magazines continue to exploit methods of treating the sick which are not only unproductive of results, but shamefully cruel in their impositions upon their victims. The treatment of tuberculosis remains one of the most fruitful fields for fraudulent advertising, surpassing the publicity formerly spent upon the treatment of venereal diseases. During the past year the Post Office Department has refused the use of the mails to a number of advertisers of this character, and this work is going on continually. Much of the success established along this line has been accomplished through the activity of the National Vigilance Committee of the Associated Advertising Clubs of the World, with headquarters in New York, whose purpose is to cleanse advertising columns from dishonesty and fraudulent statements.

The medical profession of our states of the Northwest can cooperate with this movement by keeping in touch with the Better Business Bureaus, associated with the above mentioned organization, which are located in Portland, Tacoma, Seattle, Spokane and other leading cities. If readers will call attention of the representatives of these Bureaus, which may be located in their own or neighboring cities, to advertisements of fraudulent cures and patent medicines as well as other falsely advertised remedies, they will do their part in cleaning up this abused field of advertising and publicity. Such a wide-spread evil as fraudulent advertising cannot be successfully suppressed unless there is cooperation among all the forces in sympathy with this nationwide movement.

#### THE POSTGRADUATE MEDICAL COURSE

The University of Washington is performing valiant service to the small town doctor by bringing together an illustrious group of teachers for the ninth annual postgraduate medical course, which is scheduled for Seattle, July 20-24. Doctors from the large cities, who enjoy visits from eminent men from time to time and who are fortunate in attending county societies where they may exchange experiences and studies with their fellow practitioners, are not the ones most benefited from these courses. They are especially designed to appeal to the man who seldom gets away for a lengthy period for various reasons. The topics are on every day subjects rather than prolonged

dissertations on ultra scientific points of pathology or etiology.

Dr. Blair will especially be welcomed with his wide knowledge and experience in the World War. His topics are appealing to the general practitioner, as they cover treatment of many troublesome conditions that are usually sent to the specialist in the large cities. These occasions are often humiliating to the doctor and expensive to the patient. Any teaching that will make the specialist more of a general practitioner and the general man more of a specialist is highly desirable. Drs. Barker and Clark are medical magnets of the first degree. It is not too much to say that there can hardly be a doctor who has not been influenced by the teaching of these men. Teachers are selected not so much on reputation of past performances, but rather on what they are able to teach to their audiences. Dr. Bassoe, who is eminently fitted to bring to us the latest along neurologic lines, will be remembered as the editor of the volume on that subject in the progressive Medical Year Book published in Chicago. He will present topics on a subject that probably is less understood by the general man than any other. His visit will be timely and will fill out a well rounded course—not too much, not too little, just right for absorption. The general practitioner cannot well afford to miss this opportunity to check up with himself.

#### NEW AMERICAN MEDICAL ASSOCIATION TRUSTEE

The trustees of the American Medical Association have elected Dr. Joseph A. Pettit, of Portland, as trustee of the association for the territory west of the Rocky Mountains. He will occupy the position filled so admirably and with great credit for a number of years by Dr. W. T. Williamson. The profession of the Northwest will be much gratified that a man to fill this prominent position has again been selected from their number. The trustees of the American Medical Association occupy the most responsible position among the organized medical profession of our country, acting as representatives of the greatest body of physicians in the world, to whose judgment are deferred matters of vital interest and importance concerning the whole medical profession. Representing the profession of the Northwest, we extend to Dr. Pettit our congratulations and offer him our support in the labors and responsibilities which devolve upon him.

THE POCATELLO MEETING

The annual meeting of Idaho State Medical Association, to be held at Pocatello, Sept. 3-5, will offer an interesting program which will ensure a good attendance. The following tentative program has been prepared.

Probably Dr. Engleman, of St. Louis, and others will be added to the program.

THURSDAY, SEPTEMBER 3

7 to 9 A. M.

Clinics at Hospitals

9 A. M.

Get Together, Registration, Call to Order.

President's Address.....C. W. Pond

2 P.M.

Postoperative Pulmonary Complications....

.....Wallace Terry

Obstetric Paper.....Frank W. Lynch

Radioactive Waters.....Col. L. Mervin Maus

Urology Paper.....W. F. Braasch

7:30 P. M.

Social Evening

FRIDAY, SEPTEMBER 4

7 to 9 A. M.

Clinics .....All Hospitals

9 A. M.

Pediatric Paper.....Julius H. Hess

Urology Paper.....W. F. Braasch

Internal Medicine Paper.....Walter C. Alvarez

2 P.M.

Experience in Local Anesthesia in Goiter

Surgery.....C. C. Tiffin

Goiter.....W. I. Terry

Gynecologic Subject.....F. W. Lynch

Peptic Ulcer, Clinical Aspects.....Geo. B. Eusterman

Roentgenologic Diagnosis of Peptic Ulcer....

.....Russell D. Carman

7 P. M.

Banquet.....Scientific Program

SATURDAY, SEPTEMBER 5

7 to 9 A. M.

Clinics .....All Hospitals

9 A. M.

Fracture of the Skull.....Geo. A. Downs

The Early Diagnosis of Neurosurgical

Conditions of the Head.....Ernest Sachs

Examination and Management of Recent

Injuries to the Eye.....Edward Jackson

Urology Paper.....W. F. Braasch

Internal Medicine Paper.....Walter C. Alvarez

2 P.M.

Pediatrics.....Julius H. Hess

Paper.....Geo. B. Eusterman

Paper.....Russell D. Carman

Closing Business.....Adjournment

MEDICAL NOTES

**Attendance at the A. M. A. Meeting.** The meeting of the American Medical Association, at Atlantic City was attended by a goodly representation from the Northwest. The following were registered from the states represented by this journal:

Idaho: F. M. Sprague, Pocatello.

Montana: J. A. Donovan, A. W. Morse, J. S. O'Brien. Butte; E. M. Larson, Great Falls; C. T. Pigot, Roundup; M. F. Cogswell, Helena.

Oregon: V. J. Brown, J. E. Else, R. A. Fenton, S. M. Gullett, D. H. Jessop, E. P. Lovejoy, A. E. Mackay, E. B. McDonald, J. A. Pettit, H. P. Rush, Portland; L. B. Bouvy, La Grande; N. E. Winnard, E. L. Zimmerman, Eugene.

Washington: D. E. McGillivray, Port Angeles; O. G. Kesling, Arlington; G. A. Taylor, Ellensburg; E. R. Tiffin, Enumclaw; W. F. West, Everett; A. N. Cobb, F. E. Rose, R. F. Stier, Spokane; Roger Anderson, H. T. Buckner, E. F. Chase, A. C. Crookall, B. T. King, J. T. Mason, A. H. Peacock, P. A. Rohrer, C. C. Tiffin, Seattle; E. O. Houda, Tacoma.

OREGON

**New Medical Graduates.** The University of Oregon Medical School graduated forty-five students last month. Five of this number were women. The publication of their names shows that there were twenty-eight from Oregon, ten from Washington, six from California and one from Montana.

**Acreage for Hospital.** For the proposed veterans' hospital at Portland twenty acres of ground on Marquam Hill has been offered to the Government. General Hines has announced from Washington that an additional twenty acres will be necessary before construction will be undertaken, owing to involved engineering difficulties on the tract already donated.

President Coolidge has approved the recommendation of the veterans' hospitalization board of the construction of the veterans' hospital on Marquam hill, adjacent to the University of Oregon medical school. This assures the construction of the million dollar hospital.

**Hospital Commended.** An official inspection by the national board of trustees of Shrine hospitals has placed Portland Shrine hospital first among all institutions of this character operated by the Shrine. These hospitals for crippled children meet with public approval. Two more are now under construction in other parts of the country.

**Celebrate Golden Jubilee.** St. Vincent's hospital, of Portland, observed its golden jubilee June 22-24. Dedication of the new chapel was one of the features of the celebration. There were religious ceremonials as well as banquets for nurses, medical and surgical staff and the clergy.

**Dr. O. R. Gullion,** of Eugene, has returned home after a five month's visit in Europe. Most of his study was carried on in hospitals at London and Vienna. He also visited Switzerland, France and Italy.

**Dr. Delbert Stanard,** of Eugene, has been commissioned captain of the national guard, attached to the 186th infantry medical unit.

**Dr. Gertrude French,** of The Dalles, has returned home. She spent the last eight months studying in European cities and touring the continent.

**Commission Awarded.** Dr. Laurence Selling of Portland has been commissioned major in the medical reserve, U. S. officers reserve corps.

**Dr. N. J. Flowers**, recently from Seattle, has located for practice at Milton.

**Dr. P. W. Sharp**, recently of San Francisco, has located for practice at Klamath Falls.

#### WASHINGTON

**Meeting of Hospital Association.** A meeting was held in Seattle in May of twenty-five hospital superintendents from hospitals in Washington, Oregon and Idaho. Its purpose is the advancing and standardizing hospital work and protecting hospitals from adverse legislation. Mr. C. J. Cummings, superintendent of Tacoma General hospital, was elected president and Miss Emily Loveridge, superintendent of Good Samaritan hospital in Portland, vice-president.

**New Hospital to be Built.** It has been decided to construct a hospital in West Seattle which has recently been under consideration. The hospital association has been incorporated and an architect chosen to draft plans. It will be known as the West Seattle Community hospital, and will be erected at a cost of about \$200,000.

**Addition to Sanitarium.** The county commissioners of Pierce County have received bids for an addition to the tuberculosis sanitarium at Lakeview. Two bungalows will be constructed to cost about \$10,000, and a new heating plant will be installed.

**Appointed City Health Commissioner.** Dr. E. T. Hanley was last month appointed by the mayor to the office of commissioner of health for Seattle, to fill out the unexpired terms of Dr. Geo. N. McLaughlin, recently deceased. The term of service will continue for about four years.

**Appointed State Director of Health.** Dr. A. E. Stuht of Spokane has been appointed by Gov. Hartley as State Director of Health to succeed Dr. Paul Turner who recently resigned. The headquarters of the state department of health is in Seattle.

**Visit from Chinese Physician.** Dr. Wu Lien Teh, physician extraordinary of China, head of public health service of Manchuria, arrived in Seattle last month. On the invitation of the Rockefeller Institute he is to study public health conditions and methods. His outstanding achievement in China was the organization of medical resources which prevented the bubonic plague from spreading from Manchuria.

**Meeting of Tuberculosis Association.** Washington Tuberculosis Association held its annual meeting at Walla Walla June 2-3. An interesting program was presented on various phases of the tuberculosis problem by speakers from the state and others from the East. Prof. H. S. Brode, of Whitman College, was reelected president of the association for the ensuing year. The next annual meeting will be held at Bellingham.

**Annual Meeting of Nurses Association.** The annual meeting of the State Association of Graduate Nurses was held at Walla Walla last month. There

was a large attendance of nurses from different parts of the state. Mrs. Ella W. Harrison, superintendent of the General hospital at Everett, was reelected president for the ensuing year.

**Meeting of Tri-County Society.** The fifth annual meeting of the Tri-County Medical Society of Snohomish, Skagit and Whatcom counties was held at the Skagit County Country Club, near Burlington, June 16. Sixty members were in attendance. Papers were read by Drs. C. L. Hoeffler, Everett; George Shorkley, Mt. Vernon; W. W. Ballaine, Bellingham; N. L. Thompson, Everett; H. C. Cleveland, Burlington, and J. R. Morrison, Bellingham. The Bellingham golf fans won from the doctors from Snohomish and Skagit counties.

**Highest Office Building in City.** The new Medical and Dental building, under construction at Everett, will be the first seven story office building to be erected in that city. The cost of construction will be about \$200,000. It will contain the up-to-date features of a specialized building of this sort.

**The School of Aviation Medicine** held a special session for Reserve and National Guard officers at Mitchell Field, Long Island, May 1-June 15. Among the officers taking the advanced course who qualified as Flight Surgeons was Capt. E. E. Langley, Washington N. G., from Spokane. The course of instruction consisted of lectures, practical work at the school and clinics in New York City.

**President of National Association.** Dr. Frances E. Rose of Spokane was elected president-elect of the Medical Women's National Association at their recent annual meeting at Atlantic City, N. J. It is expected that the next annual meeting will be held in a western city.

**Resigns from Staff.** Dr. John M. Henderson, of Walla Walla, has resigned from the staff of the veterans' hospital of that city. He has been in army and hospital service for the last eight years. After spending some time in the East and Europe, he will locate for practice at Seattle.

**Reappointed to Office.** Dr. G. H. T. Sparling of Seattle has been reappointed health commissioner for King County. This appointment is for a period of two years.

**Elected President of Staff.** Dr. W. D. Smith of Everett was elected president of Providence hospital staff at the recent annual election of officers.

**Elected President.** Dr. M. N. Garhart of Seattle was last month re-elected president of the Seattle Rod and Gun Club.

**Dr. E. M. Bevis**, of Spokane, who formerly practiced at Oroville, has moved to Tonasket where he will practice in the future.

**Dr. C. A. Barton**, who has practiced for the past year at Entiat, has moved to Yakima, where he will continue to practice.

**Dr. J. F. Tift**, who has formerly practiced at Bremerton, has located for practice in Seattle.

## IDAHO

**Meeting of Nurses' Association.** The Northwest section of the American Nurses Association held a meeting at Boise, June 1-2. The meeting was attended by nurses from Washington, Oregon, and Idaho. This association meets every second year, its purpose being to bring into closer relationship the graduate nurses of these states. Miss May S. Loomis of Seattle is president of the association. An interesting program was presented, comprising papers pertaining to public and private nursing and matters of hygiene.

**Idaho Falls Medical Society** held a meeting at Idaho Falls June 5. The guests of the association were the pharmacists of the city. The program consisted of the discussion of better relations between physicians and pharmacists and their relation to the general public.

**Meeting of Railway Surgeons.** The Great Northern Railway Surgeons' association held its annual meeting at Glacier National Park, June 25-26. Dr. J. G. Cunningham of Spokane is president. He gave an address on "Surgical Progress and the Railroad Surgeon." Dr. B. H. Zimmerman, chief surgeon for the railroad was in attendance.

## MONTANA

**New Detention Hospital.** A permanent city-county detention hospital for Great Falls is under consideration by the city board of health and the board of county commissioners. Two sites were under discussion, the selection of one of which was to be decided later.

**Meeting of State Nurses.** A meeting of the Registered Nurses' Association was held at Butte, June 3-4. Prominent medical men of Montana, as well as members of the association, presented papers dealing with medical and nursing problems.

## OBITUARIES

**Dr. George N. McLoughlin** of Seattle, Wash., died June 2 from Hodgkin's disease. He was born in Nashville, Tenn., in 1868. He obtained his medical degree from George Washington University medical school in Washington, D. C., in 1898. In 1900 he was appointed agency physician at the Yakima Indian Reservation. Later he served as United States physician with the U. S. Geodetic Survey. He located for practice in Seattle in 1904. He was appointed city health commissioner a year ago. He possessed a very genial, kindly disposition which made friends among all classes of people. His death is keenly felt as a loss by the medical profession and a large circle of friends.

**Dr. G. S. Stockton** of Grangeville, Ida., died at Deaconess Hospital, Spokane, June 5, after an illness with heart disease for a period of several months. He was born in Aye, Ont., in 1865. He graduated from Woodstock College, Ont., in 1882 and received his medical degree from Toronto Medical College in 1886. He located for practice in Se-

attle in 1887. In 1889 he located in Spokane and in 1892 moved to Denver, Ida., and located at Grangeville in 1902, where he practiced until his final illness. He was county physician for Idaho county for ten years. He had a wide acquaintance and many friends in that part of the state.

**Dr. J. P. Wallace** of Albany, Oregon., died June 5, after an illness of six months, age seventy-three. He was born at Andersonville, Tenn., in 1852. He graduated from Jefferson Medical School at Louisville, Ky., in 1881. He located for practice at Albany in 1884. He served as mayor of Albany for three terms. He was connected with numerous business and medical organizations, and took a leading part in the development and progress of the city.

## REPORTS OF SOCIETY MEETINGS

## OREGON

## CENTRAL WILLAMETTE MEDICAL SOCIETY

Pres., W. B. Neal; Secty., G. S. Beardsley

At a meeting of Central Willamette Medical Society, held at Lebanon, Ore., June 4, the following resolutions of condolence were passed, relative to the death of Dr. J. P. Wallace:

Whereas, God in His wisdom has seen fit to remove from our midst Dr. J. P. Wallace, the first president of our society, and

Whereas, Dr. Wallace has always been a citizen of highest standing, an ethical physician of high standing, with great ability and integrity, who will be missed greatly by former physicians and friends in the entire district, and

Whereas, the death of Dr. Wallace will be felt not only by his family, but by the members of this society and the entire community, therefore be it

Resolved, That this society extends its sincere sympathy to the family and community in its mutual loss, and that these resolutions be spread on the minutes of this Central Willamette Medical Society, and a copy be sent to the family.

DR. J. N. ROBINET  
DR. J. C. BOOTH  
DR. E. W. HOWARD.  
COMMITTEE.  
Committee.

## LANE COUNTY MEDICAL SOCIETY

Pres., M. S. Nelson; Secty., L. S. Kent

Lane County Medical Society held its last meeting of the season at Eugene, June 11. The meeting was held at the Eugene Country Club. Being ladies' night, music and dancing were added to the entertainment. About thirty were present. Dr. Ira Manville, of Portland, read a paper on Dietetics in Treatment of Disease. Dr. O. R. Gullion, recently returned from Europe, related his impressions of therapeutics as practiced on the continent.

## WASHINGTON

## KING COUNTY MEDICAL SOCIETY

Pres., A. C. Crookall; Secty., C. E. Watts

The general meeting of King County Medical Society was held at Seattle, Wash., June 1, 1925, vice-president Palmer being in the chair.

Dr. C. E. Watts presented autopsy specimens from cases of urinary tuberculosis and status lymphaticus.

PROGRAM

Dr. Arthur Gunderson of Everett read a paper on "Hodgkin's Disease." He reviewed theories as to etiology, symptoms, diagnosis and treatment, and commented on several cases which have been under his care. He stated the disease was confined to brunettes.

In discussion Dr. John Blackford stated the average duration of life after onset is two and three-fourths years. Dr. C. A. Smith made inquiries concerning etiology.

Colonel Munson, M. C., U. S. A., discussed the Army Reserve Corps and its relation to the medical profession. He urged the physicians to join the Military Reserve and thereby be prepared to serve in case of war. Two thousand officers are needed in this Ninth Corps Area.

Dr. L. L. Goodnow, of Aberdeen, read a paper on "The Injured Abdomen." He referred to cases showing no signs of external injury, reporting on twenty-one of such character. He discussed injuries of the bladder, liver, spleen and kidney.

The paper was discussed by Drs. H. J. Davidson, J. M. Blackford, C. A. Smith, Walter Kelton and A. O. Loe. Dr. Kelton described the experience of the Department of Labor and Industry, especially as related to traumatic hernia and appendicitis.

The following were voted into membership of the society: Drs. Morton Myers, M. S. Jared, E. A. Gerhart and A. B. DeFreece.

Dr. G. W. Swift reported on the proposed County-City hospital, which is to be located on the north side of Beacon Hill. Slides were presented showing the proposed group of buildings.

A meeting of the Medical Section of the society was held June 15, Dr. G. C. Miller, chairman, presiding. The meeting was largely attended.

The speaker was Dr. A. J. Pacini of Chicago, his subject being "Modern Physiotherapy." He delivered an eloquent and thrilling address. His subject was based on the solar spectrum, the different phases of physiotherapy being predicated on the physical features of the spectrum. He connected together the various modalities employed, based on their respective wave lengths, all being associated in a series with the solar spectrum.

PIERCE COUNTY MEDICAL SOCIETY

Pres., W. B. McCreery; Secty., W. B. Penney

The regular meeting of the Pierce County Medical Society was held at the Mountain View Sanatorium May 26, 1925. Vice-President E. F. Dodds presided, Dr. C. F. Engels acting as secretary pro tem.

The speaker of the evening was Dr. Frederick Slyfield, of Seattle, who presented a paper on "Easy Methods of Diagnosis for the General Practitioner." He was pleased to see the passing of phthisiophobia.

He made a plea for the earlier recognition of tuberculosis and more care in diagnosis, with sanatorium care for all possible cases and the certainty of cure before discharge. He does not use tuberculin, either for testing purposes or treatment and does not believe that fattening the patient is a cure for tuberculosis.

Dr. Christen Quevli delivered an address on "The Early Treatment of Tuberculosis in Territorial Days." He said that in those days the tuberculous patient, even as the patient with appendicitis, was lucky when he failed to get a doctor. Overexercise, dope, etc., killed many patients who would have been better off without attention. The first modern work in the treatment of tuberculosis was done by Dr. Babington in England, and like many a pioneer he was hooted and ridiculed for his methods. He established the first sanatorium in England. Trudeau was the modern leader in this country and his work is so recent as to be familiar to all.

Dr. John F. Steele showed a series of x-ray films of chests, and stated that he hoped to make the Mountain View Sanatorium a Class A institution in the near future.

WHITMAN COUNTY MEDICAL SOCIETY

Pres., L. G. Kimzey; Secty., Frank St. Sure

Whitman County Medical Society held a meeting at Colfax June 8. There was a large attendance of members of the society.

Dr. J. Earl Else of Portland read a paper on "The Present Status of our Knowledge of Goiter." This was illustrated with lantern slides. Dr. Frederick Eppelen of Spokane read a paper on "The Therapeutic Use of Digitalis."

MONTANA

FERGUS COUNTY MEDICAL SOCIETY

Pres., A. C. Biddle; Secty., E. A. Weldon

A meeting of the Fergus County Medical Society was held at Lewistown, June 2.

Dr. A. W. Deal of Lewistown read a paper on "Fractures of the Femur," supplemented by radiographs, and discussed the latest methods of treating this condition. Plans for entertaining the state association at its annual meeting in July were discussed.

**Reduction of Increased Intracranial Pressure.** Max M. Peet, Ann Arbor, Mich. (Journal A. M. A., June 27, 1925), says that the slow reduction of increased intracranial pressure in the absence of shock, hemorrhage, vomiting or dehydration is satisfactorily accomplished by the oral or rectal administration of magnesium sulphate. The rapid reduction of intercranial tension, in acute intercranial traumas unassociated with shock, is best accomplished by the intravenous administration of hypertonic Ringer's solution. Glucose may be given later to maintain the lowered intracranial pressure. Hypertonic glucose solution administered intravenously is indicated when acute intracranial pressure is associated with shock or hemorrhage, and in the less acute cases when complicated by dehydration, nausea and vomiting.

## BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

**Dyspepsia: Its Varieties and Treatment.** By W. Soltau Fenwick, M. D., B. S. (London), Late Physician to the Evelina Hospital for Sick Children, London. Second Edition, Revised. Octavo of 515 pages, illustrated. Philadelphia and London. W. B. Saunders Company, 1925. Cloth, \$6.00 net.

Some fifteen years ago this book was reviewed in these columns and enthusiasm was expressed over the clinical basis on which the author founded his classification and general consideration of stomach troubles. Since that time much water has flowed under the bridge and the general conception of digestive disorders has taken on a more rational understanding. Thus it was pointed out by Dr. W. J. Mayo years ago that only 10 per cent of stomach troubles originated in the stomach (ulcer and cancer), but that all the rest were either reflex from diseases of adjacent abdominal organs (cholecystitis, appendicitis, ovarian cyst, etc.) or were due to general neurasthenia, enteroptosis, or general diseases, as tuberculosis, heart disease, etc.

Fenwick took the broad clinical view of digestive disorders and has been vindicated by time, but on the other hand he does not seem to have absorbed much of the medical progress that has developed since his first edition. Thus in this work we do not find any description of the most common of all forms of chronic dyspepsia of adults, in fact three times more common than any other, that is the dyspepsia of chronic cholecystitis. Then, again, under *achylia gastrica* he makes no mention of its frequency in chronic gallbladder disease. True, the essential form is probably congenital, but this is a rare disease and the more common form is secondary and very frequently due to chronic cholecystitis, as enforced particularly by Lockwood.

The author discusses the complications and sequelae of enteroptosis, under which head he finds that colitis occurs in 30 per cent of cases who have digestive symptoms. He also notes the existence of 23 per cent of appendicitis in his cases of splanchnoptosis, half of which had been operated upon without improvement and in this variety of appendicitis appear glycosuria and pruritus. The glycosuria disappears on removal of the appendix. It is a common experience to see patients, who suffer from enteroptosis and have vague abdominal pains, suffer still more from the hands of the surgeon. These patients, when they suffer at all, are usually undernourished and proper caloric feeding in bed with external heat, and later abdominal support, produce some of our most brilliant and satisfactory medical cures. There are still too many operations on the appendix, gallbladder, prolapsed right kidney and displaced uterus in enteroptosis.

The writer has often noted tenderness over the gallbladder in enteroptotic subjects, without symptoms of gallbladder disease, possibly because of the low position of the liver. There is little use to treat these patients properly without at least a month in

bed. Fenwick's book possesses all its original value but is scarcely up to present day standards. It is beautifully printed and as light as a feather in the hand.

WINSLOW.

**1924 Collected Papers of the Mayo Clinic and the Mayo Foundation, Rochester, Minnesota.** Octavo of 1331 pages, 254 illustrations. Philadelphia and London. W. B. Saunders Company, 1925. Cloth, \$13.00 net.

It is always one of the chief medical treats of the year when a new volume of the Collected Papers of the Mayo Clinic appears. Every paper from the Mayo Clinic or Foundation for the year 1924 is published herein, either in full, abridged, abstracted or by title.

W. J. Mayo has utilized his enormous surgical, and therefore tactile and ocular experience, to enrich the technically medical side of practice during the past few years, more than perhaps any internist has accomplished, by his articles on the liver, kidneys and spleen. In this volume he continues such studies in his paper on blood dyscrasias dependent on pathologic conditions of the spleen. He states that blood transfusions of 500 to 600 c. c. will raise the hemoglobin from ten to twenty points. When there is oxygen shortage, as from overexertion, transfusions are directly contraindicated but bleeding, by relieving a dilated heart and engorged lungs, will more certainly bring about recovery.

Dr. Mayo points out that splenic anemia is not an entity but is part of a syndrome, and that the enlargement of the spleen is protective and due to an enormous development of fibrous tissue, probably the result of infection. Since the spleen is the graveyard of worn out red cells, enlargement of it leads to overgreat destruction of red cells and anemia, hence the value of splenectomy. The extraordinary benefit of splenectomy in chronic purpura is noted. The favorable influence of splenectomy in suitable cases of splenomyelogenous leukemia is discussed. Altogether some 358 patients have had splenectomy at the clinic.

Among other papers by Charles H. Mayo there is a most interesting and practical one upon gallstones and diseases of the gallbladder, in which he states that much more bile flows through the common duct than ever enters the gallbladder, and that stones are present in 70 per cent of all cases of gallbladder disease. Tenderness over the gallbladder is due to local peritonitis and tension, from spasm of the sphincter of Oddi. The relations of cholesterol to the production of gallstones are described. Eighty per cent of gallbladder disease occurs in women, and more often during or after pregnancy, when excess of fat in food leads to excess of cholesterol in the blood. Gallbladder disease usually begins a metabolic disorder of the liver, and is continued by infection. This volume represents the work of what is now undisputably the leading clinic in the world in all branches of medicine and allied sciences, and should be acquired by every medical man who is fortunate enough to afford this annual addition to his library.

WINSLOW.

# Portland Surgical Hospital



The Portland Surgical Hospital, 611 Lovejoy St.  
Mrs. Tom Richardson, *Superintendent*

# Portland Convalescent Hospital



The Portland Convalescent Hospital, 862 Marshall St.  
Miss Elva Hill, *Superintendent*

The Portland Surgical and Convalescent Hospitals have been co-ordinated and  
modernly equipped for the practice of Surgery, Medicine and Radio-Therapy.  
CAPACITY—NINETY BEDS

**THE CLINIC**  
OF  
**DRS. COFFEY, SEARS AND JOHNSTON**  
DOWN TOWN OFFICES:  
11th Floor Stevens Building, Portland, Oregon

**Modern Surgery.** General and operative. By John Chalmers Da Costa, M.D., LL.D., F.A.C.S. Samuel D. Gross, Professor of Surgery at Jefferson Medical College Hospital, etc. Ninth edition, 1200 illustrations. Cloth, 1527 pp. \$10.00. W. B. Saunders Co., Philadelphia and London. 1925.

This present edition is replete with modern surgical thought and practice. The volume contains over fifteen hundred pages, mostly devoted to those branches of surgery more closely connected with actual practice. Chapters on subjects like bacteriology, asepsis, antisepsis and bandaging are omitted, whereas chapters on the x-rays in surgery, electrothermic methods in the treatment of neoplasms, radium and combined methods of treatment have been written or revised by authorities in their respective fields. The work as a whole maintains the high standard of previous editions, and it is difficult to give adequate expression to one's enthusiasm on such a well rounded, complete, and valuable treatise on this all important subject of modern surgery.

FORBES.

**Newer Methods of Ophthalmic Plastic Surgery.** By Edmund B. Spaeth, M.D., F.A.C.S. Chief, Eye Clinic, Walter Reed U. S. Army General Hospital, Washington, D. C., etc. Clinical Instructor and Assistant in Ophthalmology, The Army. With 168 illustrations. Cloth, 258 pp. \$5.00. P. Blakiston's Son & Co., Philadelphia. 1925.

Plastic surgery of the face has made long strides forward during and after the late war. With the help of Ollier-Thiersch grafts wrapped over dental moulds, fascia, muscle, fat, cartilage and pedunculated grafts, unsightly deformities are so well reconstructed that they get a striking resemblance to original features. Spaeth with great skill, supported by large practical experience, has given us a vivid picture of this field in this book.

Details of technic are given clearly, illustrated with many photographs and artistic drawings, showing the consecutive steps of a given operation. Reconstruction appliances for inoperable cases are also briefly described. Old approved methods are not forgotten, but given due credit. We are only referred to textbooks of ophthalmology for their more minute description to save space. A large bibliography of ophthalmic surgery completes this valuable book.

KLEMPNER.

**Diseases of Children for Nurses.** Including Pediatric Nursing, Infant Feeding, Therapeutic Measures Employed in Childhood, Treatment for Emergencies, Prophylaxis and Hygiene. By Robert S. McCombs, M. D., Associate in Medicine at the Philadelphia Polyclinic; Instructor of Nurses at the Children's Hospital of Philadelphia. Fifth Edition, Thoroughly Revised. Octavo of 581 pages, illustrated Philadelphia and London. W. B. Saunders Company, 1925. Cloth, \$2.75 net.

This volume is more pretentious than some books of this character written for nurses. In it is pre-

sented a brief description of each disease found in infancy and childhood. Several pages of anatomy and pathology are included to give an understanding of the structure of the body and changes taking place during disease. Sufficient treatment is presented to give a basis for its intelligent application. A useful chapter is that on therapeutics which, beside giving the therapy of individual drugs, describes the preparation and application of many useful household remedies. This is a useful volume for the nurses.

**The Surgical Clinics of North America** (Issued serially, one number every other month.) Volume V, Number II (New York Number April, 1925.) 337 pages with 105 illustrations. Per clinic year (February, 1925, to December, 1925.) Paper, \$12.00; cloth, \$16.00 net. Philadelphia and London. W. B. Saunders Company.

Many surgical conditions are discussed in this volume which enter into the experience of every surgeon. In operating for cancer of the breast Erdmann considers the use of the x-ray, stating that he employs it less frequently than formerly both before and after operation. He states that skin recurrence and complications are far greater in number than before the use of the high current. He advocates it, however, in selected cases. Heyd offers an extensive discussion of hyperthyroidism, going extensively into its histology and pathology. His operative procedure consists of dividing the isthmus and dissecting each lobe outward from this incision, leaving a thin film of tissue paralleling the trachea. Many other interesting conditions are presented in this volume.

**New and Nonofficial Remedies, 1925,** containing description of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1925. Cloth. Price, postpaid, \$1.50. Pp. 461+XL. Chicago: American Medical Association, 1925.

This volume contains trustworthy information regarding proprietary medicines, besides descriptions of nonproprietary preparations which the Council on Pharmacy and Chemistry considers worthy of consideration. It has been extensively revised, omitting many preparations of previous editions. Some general articles have been revised and others entirely rewritten in order to bring the subjects under consideration up-to-date. It is necessary for physicians to dispense the newer remedies but they are often reluctant to do so. The importance of milk in the child's dietary is indicated by the space of forty pages devoted to may hesitate to accept all of the manufacturer's claims. Not being able to judge of their merits, they can rely upon the statements found in this volume which includes all proprietary remedies which one will care to prescribe.

# NORTHWEST MEDICINE

The Journal of the State Medical Associations of Oregon, Washington, Idaho, Montana  
and Pacific Northwest Medical Association

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## ADDRESSES

### THE REASON FOR OUR EXISTENCE\*

ALEX MONRO, M.D.  
VANCOUVER, B. C.

I wish for a moment to turn back the pages of history, even though they cover but that brief span of time, dating from the inception of this Association five years ago, in this Queen City of the Pacific Northwest, in order that an opportunity be given briefly to review the work it is doing and the "why" of its existence.

We will state, first, some of the reasons that led to its formation. To those who do not reside within the territory comprised in the scope of this Association, and particularly to those from the East, whose homes lie within easy reach of the great teaching centers and founts of learning, will come a ready understanding of that feeling of remoteness and isolation, geographically speaking, felt by so many of our brethren whose lot is cast in this far-western section of America, and will appreciate at once the difficulties confronting them, when they feel it is not only desirable but a necessity to bring their professional knowledge up to date by means of a postgraduate course in hospital and laboratory.

The loss of time from practice and actual cash outlay involved in making long journeys weigh heavily against ninety per cent of the medical men, whose desires and ambitions lie in this direction.

In this connection may I be permitted the opinion that in no section of the North American continent will there be found medical men keener for knowledge and for improvement of their professional technic than you will find in the men of these prairie, intermountain and coastal regions of the Pacific Northwest.

A remedy for this condition had to be found, and as no help was forthcoming from without, it perforce had to come from within. "The Lord helps those who help themselves," and as a result of a conference of delegates from the various States and Provinces interested, this Association was launched upon a sea already crowded with medical craft, just five years ago, in this same city of Portland.

The outstanding aim and purpose of this organization was, first, to provide a service to its members that neither national, state, provincial nor local agencies were doing or attempting to do, and which in this main aspect of its activities was neither a competitor nor in opposition to sister organizations. It aimed to bring to the very doors of its members those whom we may well designate as "the wise men of the East," the scientist, scholar, savant, at whose feet those who desired might refill their cup of knowledge, drink to the full, and stand refreshed again. In passing I may say that the Association has an unwritten rule that no one residing within its territory shall be eligible to address its scientific meetings, the only exception to this being in the case of men occupying full-time University chairs.

\* President's Address. Read before the Fourth Annual Meeting of the Pacific Northwest Medical Association, at Portland, Ore., June 29-July 1, 1925.

A secondary, although scarcely less important aim of the founders of the Association was the promotion of better understanding and relations between those two English-speaking nations, Britain and America, with Canada as a link between them, stretching out, as it were, a hand of understanding and confidence to each. This international character of the Association has always been kept in mind, and is reflected in the program, where are found the names of representative leaders in medicine and surgery of the countries concerned.

Have the hopes and aspirations of the founders been realized? Has the work done by this Association during the past four years justified its existence? To this I unhesitatingly answer "Yes!" In 1922, at the Spokane meeting, Dr. Frank Billings, representing the American Medical Association, was present, and commended most highly this Association for undertaking to provide a service that had been overlooked or neglected by the national organization. He said he was convinced that many other sections of the United States were in a similar plight as the Pacific Northwest, and predicted that steps would be taken by the Federal Association to remedy it.

Similarly in Canada the attention of the National Association was drawn to the work being done by the Pacific Northwest Medical Association and as a result, and through the efforts of its able Secretary, Dr. T. C. Routley, steps were taken last year by the Canadian Medical Association, to supply groups of university teachers to give the scientific programs at the annual meetings of the Western Provincial Associations, held at Winnipeg, Moose Jaw and Edmonton. Needless to say, this service at the hands of a parent organization was much appreciated. This "stirring of the dry bones" of the national organizations has been a good thing for all concerned, and more benefit is yet to come from it.

What of the future of this Association? The answer appears to be simple enough. To use the language of commerce, "the idea is sold." By the term "idea" I mean giving the members annually an opportunity of hearing a program of the highest merit, presented by outstanding leaders in the profession, a program of superlative excellence, well balanced, and prepared specially to suit the wants of its hearers. So long as the Association continues to provide such a high class service of unimpaired quality, so long will the profession continue to accord it the same cordial and generous support it now enjoys.

## THE GENERAL PRACTITIONER AND FAMILY PHYSICIAN\*

GEORGE MCGRATH, M.D.

HAMILTON, MONT.

Medical practice in some form is probably as old as man. The oldest record extant dates from the tenth century before the beginning of the Christian era. Throughout those many centuries the object has been and is at the present time to prolong life and alleviate human suffering. While we believe that little was accomplished in that way through many centuries, we do not think that their labors were entirely in vain.

We are told that Chiron, the preceptor of Aesculapius, advocated dieting, pure air and temperate living. Hippocrates, in the fourth century, B. C., classified diseases into epidemic, endemic and sporadic. Galen, who lived one hundred and thirty years antedating the Christian era, described every bone in the human body and the functions of muscles. He recognized two kinds of nerves, sensation and motion, and described the cranial, thoracic and abdominal cavities. Between that time and the eighteenth century medical history gives us, for various worthy reasons, among others, Vesalius, Ambrose Paré, Sydenham, Wharton, Harvey, Stenson, Peyer, Brunner and Cowper. In the eighteenth and nineteenth centuries we have Jenner, Laennec, Virchow, Pasteur, Koch, Morton and Simpson.

As we pause and look into the past, we are impressed with a feeling of awe and respect for a profession which has existed and progressed through so many ages, always with the one object, the alleviation of suffering and prolongation of life. How many dynasties have come and gone during those years. Are we not honored in being members of a profession whose very age is a monument to its efficiency for the benefit of mankind?

To within the last fifty or sixty years the general physician and surgeon were the medical profession but, beginning with the days of Lister and Pasteur, the avenues opened for advancement in medical and surgical knowledge through asepsis, antiseptics and bacteriology so stimulated the growth of medical learning that its branches, the specialties, became so numerous and so sturdy as to obscure and partly hide the parent tree, the general medical profession. So much has it been overshadowed that in the minds of some its days of usefulness belong to the past. Dr. Wilbur, President of the American Medical

\* President's Address. Read before the Forty-seventh Annual Meeting of Medical Association of Montana, Lewistown, Mont., July 8-9, 1925.

Association in nineteen hundred and twenty-three, stated in his address at the San Francisco meeting, "the general practitioner, that real disciple, interpreter and practical exponent of medical science, has been pushed aside in many parts of the country both from within the profession and from without."

When we fail to hold or to realize either as individuals or as a body what are our sensible expectations, it is well in the majority of instances to look within rather than without for the cause of our disappointments. The general practitioner in his desire to make use of and to have all the latest methods of diagnosis, has become so spread out and his thoughts so attenuated that he frequently overlooks, sets aside or neglects to use the basic principles, the fundamental requirements of a correct diagnosis, namely, careful history taking and thorough, painstaking physical examination.

It may cause us to glow with enthusiasm to read that the roentgenologist can diagnose duodenal or peptic ulcers or early tubercle of the lungs in ninety per cent of the cases. However that may be, I believe it is unfortunate for the general practitioner to think that he can do likewise. The correct interpretation of x-ray plates requires much training and study, much more than has been had by the majority of general practitioners. It is true the public expects much from the x-ray, no matter in whose hands it is placed. It is true they believe, when the fluoroscope is used or when a plate is developed, the physician can discern and read all the physiologic and pathologic conditions within the body; and it is true but sad that the x-ray is frequently used to strengthen and impress that belief on the patient's mind. Outside of fractures and dislocations, the correct and intelligent interpretation of fluoroscopic views and x-ray plates requires a greater training than has been received by most general practitioners. Fortunate is the man and thrice fortunate the patients of him who, whether as physician or surgeon, realizes and is governed by his limitations as well as his qualifications.

Dr. Frank Billings in his address before the Congress of American Physicians and Surgeons, May 2, 1922, said, "Too often the necessary, primary and fundamental physical examination is not made or, if it is, not as thoroughly made as it should be. Over and over again an erroneous diagnosis is made on the basis of the laboratory findings, which would have been avoided and the correct diagnosis established by available simple methods of examination." The doctor further said, "Based on long experience in consultation and in general hospital and private

practice, it is my opinion that a correct anatomic and functional diagnosis can be made in from eighty to eighty-five per cent of all the patients of an average community by a qualified, industrious, painstaking general practitioner by the sole application of the trained mind, the special senses, the hands and an always available simple laboratory equipment."

How often have we neglected painstakingly to use the methods of diagnosis that have been advantageously used for years, that is, inspection, palpation, percussion, mensuration and auscultation. Nearly every practitioner has the opportunity to make one to many careful clinical examinations a day. By so doing he will strengthen and sharpen his powers of observation and make of himself a diagnostician who can give a reason for his opinions, a diagnostician who can intelligently justify the reason for the medical or surgical faith that is within him. Understand me not as speaking disparagingly of biochemistry, metabolism, blood chemistry, fluoroscopic and x-ray examinations, electrocardiographic and other aids in medical examinations. They do not and will not take the place, and are secondary and should so continue to be to careful, thoughtful clinical work. It is my belief that each and every pathologic, functional and neurologic condition gives a clinical manifestation, a manifestation which we may not be able to discern or differentiate but which nevertheless exists. The general practitioner who will carefully use his faculties, his thoughts, his reasoning and his senses in the examination of his patients, who will attend if possible some medical center a few weeks each year, who will frequently consult his medical library and journals, who will attend his medical societies and who will take for himself at least two weeks each year of recreation entirely apart from his professional life, need have no fear of being overtaken by premature medical senility or of being pushed aside either from within or without the profession.

Medicine is both a science and an art, not an exact science and such it can never be, as one of the premises and often both vary in each case of sickness. Each patient has a characteristic individuality and the disease occasionally varies in type. Hence the conclusions must vary, and for that want of exactness and to that extent the practice of medicine becomes an art, that is, the principle of science practically carried out as applied to the individual. It is this very knowledge of the idiosyncrasies, of the habits, of the vitality, of the peculiarities, of the constitution of the individual ac-

quired over years of observation in health and sickness that is of great aid to the family physician.

I believe it would be advisable for the medical profession through its societies to foster and encourage preclinical medicine, such as has been advocated by the Prudential Life and other insurance companies during the past few years. Perhaps, if a preclinical examination were given to each adult individual once a year, as many years would be added to those of mature age as has been added to infants and children by means of sanitation and improved hygienic conditions. Who knows the number of cases of disease of the heart, of kidney disease, tuberculosis, cancer and other ailments that might be prevented by preclinical examinations?

The general practitioner and family physician occupy a position that is granted to none other in the medical profession and to few if any in other walks of life. When he has practiced in the same families through two or three succeeding generations; when he has observed the children grow from infancy to childhood, from childhood to womanhood and manhood; when he has been privileged and expected to address them by their Christian names; when he has rejoiced in their happiness and sympathized in their sorrows; and when he has passed the meridian of life and yearly observes his shadow lengthening toward the East; in surroundings such as these he will enjoy a satisfaction and a comfort that money cannot buy, that the world cannot give and the world cannot take away.

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**Pathologic Changes in Lung from Use of Mercurochrome-220 Soluble.** In order to determine the effect of mercurochrome, H. J. Corper, Denver (Journal A. M. A., July 25, 1925), gave a series of twenty-one dogs intratracheal injections of mercurochrome in concentrations of from 0.01 to 2 per cent. Distinct pathologic changes were produced, which persisted for as long as four days, in concentrations as low as 0.1 per cent. The pathologic changes produced acute hemorrhagic concentrations to a pronounced acute hemorrhagic pneumonia with focal abscess formation and tissue necrosis in the higher (1 and 2 per cent) concentrations. Resolution may occur as in acute lobar pneumonia, or there may result a proliferative pneumonitis with granulation and scar tissue formation. The mercurochrome seemed to exert in vivo a preservative effect, especially on the erythrocytes, as is evidenced by their slow disintegration in the affected areas. Corper also determined the effect of mercurochrome on the normal pleura and the contiguous lung parenchyma. A series of eight dogs was given right side intrapleural injections of mercurochrome. Distinct pathologic changes were produced in concentrations as low as 0.1 per cent. In the lower concentrations (0.1 per cent), there resulted a transient dry fibrinous pleurisy, while in the higher concentrations (dilutions of from 0.5 to 2.0 per cent), there occurred hemorrhagic pleural exudates and acute hemorrhagic pneumonia, resembling that occurring after the intratracheal injection of like solutions of mercurochrome.

## ORIGINAL CONTRIBUTIONS

### ANGINA PECTORIS\*

JAMES B. HERRICK, M.D.

CHICAGO, ILL.

When a few months ago I was asked to address this meeting and it was suggested that I take as my topic angina pectoris and obstruction of the coronary artery, I hesitated. I feared that a topic so long known, so frequently and so recently well written upon, was worn threadbare. But three events that happened while I was hesitating, caused me to withdraw my objection and led me to accept the honor of being your guest and to accept as well the suggestion as to the title.

A doctor above the average in intelligence, a practitioner for twenty-five years, had brought a patient to my office, had acquiesced in my opinion that the ailment was angina pectoris, but said: "What is angina anyhow? How do you tell it? It's a mixed up disease in my mind."

A prominent surgeon said to me: "I am called out of Chicago tomorrow (I think it was to Iowa) to operate for gallstones. But as the family doctor described the symptoms over the telephone it brought to mind one of those cases of coronary disease I once heard you talk about. I want to brush up on it. Let me have a reprint." He told me a few days later that he was sure the trouble was coronary obstruction and not gallstones.

About this time I was invited to read a paper before the county society in a large eastern city and the subject requested was "The Clinical Recognition of Coronary Obstruction." So I thought that, if angina was hazy to one of my own students of many years experience, if the Iowa practitioner had mistaken a coronary accident for gallstones, if the surgeon felt that he must brush up on the subject before venturing his opinion, if the medical society in a city of more than two million inhabitants still wished to hear about obstruction in the coronary arteries, perhaps I was justified in appearing before you and speaking on this old subject. If some of you nudge your neighbors and ask, is he speaking on angina pectoris and coronary obstruction "yet" or "again," I shall not marvel nor shall I be offended. I shall have to admit that it is both yet and again.

I shall try to keep in mind that I am addressing an audience made up largely of general practi-

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\* Read before the Fourth Annual Meeting of the Pacific Northwest Medical Association, at Portland, Ore., June 29-July 1, 1925.

tioners who will wish to carry away a few practical points rather than to listen to a review of various theoretical and moot questions as to pathogenesis or the latest details of surgical treatment. These latter are better read than heard.

I shall, therefore, discuss briefly the clinical manifestations of angina pectoris, some of the atypical and confusing features, prognosis and treatment. I shall speak in outline of pathogenesis. Tomorrow I shall discuss more at length obstruction of the coronary arteries.

#### CLINICAL SYMPTOMS

May I read to you the first clear-cut description of angina that was ever written? Rougnon, Morgagni and perhaps others had described isolated cases and noted some of the salient features, but the first comprehensive clinical portrayal was by William Heberden. The quotation does not strictly contain the first use of the term angina pectoris, for it is from Heberden when he wrote in 1782, when he had seen one hundred cases. The original description is contained in a communication to the London College of Physicians in 1768, based on an experience with less than thirty cases. The two descriptions are, however, nearly identical.

"But there is a disorder of the breast marked with strong and peculiar symptoms, considerable for the kind of danger belonging to it, and not extremely rare, which deserves to be mentioned more at length. The seat of it, and sense of strangling, and anxiety with which it is attended, may make it not improperly to be called angina pectoris.

"Those who are afflicted with it are seized while they are walking (more especially if it be up hill, and soon after eating), with a painful and most disagreeable sensation in the breast, which seems as if it would extinguish life, if it were to increase or to continue; but the moment they stand still, all this uneasiness vanishes.

"In all other respects the patients are at the beginning of this disorder, perfectly well, and in particular have no shortness of breath from which it is totally different. The pain is sometimes situated in the upper part, sometimes in the middle, sometimes at the bottom of the os sterni, and often more inclined to the left than to the right side. It likewise very frequently extends from the breast to the middle of the left arm. The pulse is, at least sometimes, not disturbed by this pain, as I have had opportunities of observing by feeling the pulse during the paroxysm. Males are most liable to this disease, especially such as have passed their fiftieth year."

Heberden then states that as time goes on the attacks are apt to occur on slighter provocation, to last longer, and he tells how the pain may extend even to the fingers, sometimes being noted in the right arm as well as in the left. Of nearly a hundred people whom he had seen with this disorder only three had been women.

"The termination of the angina pectoris is remarkable. For if no accident intervenes, but the

disease go on to its height, the patients all suddenly fall down, and perish almost immediately."<sup>1</sup>

The accuracy of this picture of angina is truly remarkable. There is little to add and little to subtract today. It is all there—the greater frequency in men, the age about fifty, the substernal pain, the radiation to the arm, the attack provoked by effort, the influence of the hill and the full stomach, the immobility, the erect posture, the sense of impending death, the sudden death, the clear differentiation from ordinary cardiac disorders attended by dyspnea. We have more definite notions than had Heberden as to its pathogenesis, though these notions are even now by no means very clear. We modify the picture a little here and there but leave practically untouched the broad, clear outlines as he drew them.

#### CONFUSING OR MISUNDERSTOOD FEATURES

The fact that many patients with angina die suddenly in a first or at least in an early attack has led to the notion that frequent repetition of the seizures indicates some other condition than true angina. This conception is entirely wrong. As Heberden said, as time goes on the paroxysms may come at shorter intervals and on slighter provocation until the fatal one. There may, therefore, be many attacks, even many in a day; the trouble may last for years. Many of the cases in which death occurs in the first attack are in reality instances of coronary thrombosis which I will discuss later.

Another fixed notion that is often misleading concerns the severity and character of the pain. Heberden and all other writers emphasize the fact that the pain is severe, agonizing, producing in the sufferer a sense of impending death, as it constricts his chest and radiates to the arms, especially the left arm. But one must realize that there are milder forms; the patient may always slow up so that the pain does not become severe. Some patients refuse to admit pain, describing the sensation as a feeling of tightness, pressure, fullness or even only a burning.

There is believed by many to be an angina *sine dolore*, a form graphically described by Gairdner who suffered from it. And there may be no radiation, or it may be to the neck only, or to the shoulder, or to the teeth or in other direction. At times it is a tingling or numbness spreading down the inner arm even to the little finger. And rarely the tingling or pain seems to start in the fingers or

1. Heberden: Commentaries, pp. 292-295.

arm and travel up to the sternal region. Sensitiveness to light touch may be present over the upper chest or down the arm, the hyperesthesia sometimes persisting after the attack. Schmidt emphasizes a tenderness on pressure over the nerves in the brachial plexus. Libman describes an unusual sensitiveness to pressure over the styloid process. The provocative causes may be slight at one time; at another in the same patient strenuous exertion or a fit of anger will not be followed by an attack.

The disease, then, may be capricious but it should be remembered, one attack is practically always a replica of the preceding, differing in severity perhaps or in provocative cause but recognized by the patient as of the same nature. This fact is of value when one tries to differentiate the true angina from the so-called false type of the disease.

Again, so much emphasis has been laid on the sclerotic or atheromatous condition of the coronary arteries and the aorta, a condition frequently associated with high blood pressure, that the impression prevails with many that angina pectoris is always attended by high blood pressure and general arteriosclerosis. While this is often true there are many exceptions. General sclerosis is often lacking even, when the aorta or coronary or both may show marked changes. Blood pressure may be high but it may be normal. So, while the finding of a large heart, thickened peripheral vessels and a high blood pressure may be confirmatory evidence as to the anginal character of a substernal distress, the absence of these findings should by no means lead one to exclude the condition.

Electrocardiographic changes are not uniform enough to enable one to place much value on them. In many instances the tracings are normal. Left ventricular preponderance may be noted. Inverted T waves or broad and bizarre Q R S T complexes are sometimes suggestive of organic lesions in myocardium or conducting system.

Of late there has been a tendency to regard angina pectoris as nearly always due to syphilis. This is wrong. As a matter of fact, it is associated with syphilis in probably no more than one-third of all cases. Gallavardin found that, while in those under fifty the percentage of syphilitics was high though still less than one-half, of those over fifty the great majority were nonsyphilitic.

As is well known, thoracic aortic aneurysm is nearly always—in my experience thus far always—of syphilitic origin. Aortic regurgitation is in many instances due to syphilis. In these two conditions

the aorta and often the coronaries are extensively diseased and there may be anginal paroxysms. Perhaps from this association the notion has spread that angina pectoris is of syphilitic origin. But one should not, as in the case of tabes, general paresis or thoracic aneurysm, place the luetic stigma on the sufferer from angina, whose only fault may be that he has inherited early vascular sclerotic change or acquired it through infections, intoxications, the strenuous life, through age or through unknown cause.

The physician may be thrown off the track by the fact that occasionally the patient does not during the attack in typical manner remain standing or sitting, immobile and statuesque. Rarely he prefers to lie down. I have had one who insisted upon it that he continued walking; walked it off, he said. One woman always got on her hands and knees until the seizure was over and then gave way to hysterical sobbing. Usually, however, the patient stands or sits by choice.

In general, blood pressure rises during an attack but it may not change.

Physicians sometimes hesitate to ascribe the symptoms to the heart because heart disease is so associated in their minds with dyspnea and with rapid, irregular or weak pulse, none of which may be present during an attack. As a matter of fact, as the keen observer Heberden noted, dyspnea is commonly not present as a feature of a paroxysm and the pulse is often unaltered in rate or rhythm. One may go even further and state that, as dyspnea between paroxysms, cyanosis, rales and other signs of cardiac weakness appear, often pain lessens or vanishes.

The late John Musser in 1897 called attention to the fact that angina might cease as dilatation came on. Other observers note that with decompensation or auricular fibrillation pain lessens. Wenckebach says: "What damages the heart muscle wards off angina." Daniélopoulu: "Angina and heart failure are antagonists." R. Schmidt: "Complete arrhythmia of the heart is in general met with but rarely in angina pectoris." There is significance also in the figures of Levine who in 103 cases of angina found only one with auricular fibrillation, while in 200 cases of fibrillation in adult hearts, believed to be the seat of chronic fibrotic changes, no angina was noted. This fact, it may be stated, is a strong argument against the theories that make the anginal pain due to weakness,

fatigue, exhaustion of the heart muscle, a point to be taken up later.

I must say a word about false or pseudoangina, a term objected to by Mackenzie and ridiculed by Allbutt and yet not without its usefulness and surely as good as Allbutt's "mock angina." For we must recognize as of importance from the standpoint of prognosis and treatment a form in which the underlying pathology is not the organic change in aorta or coronaries but rather a neurotic condition with hypersensitiveness of nerves to toxic, psychic or other irritants, a form in which, if there can be removed the irritating cause or the sensitiveness of the receptive apparatus, recovery occurs. This form, as is true of neurasthenia and psychasthenia, is oftener met with in women. Knowledge of this fact and knowledge that women are comparatively rarely afflicted with the so-called true or organic type may cause the doctor to overlook the real disease in women, a most regrettable error. Without going into details as to differentiation (each case has to be studied on its own merits), one may get help by remembering that in the cardiac neurosis, the so-called false type, the provocative cause may be lacking or may be one thing today, another tomorrow. The pain is often variable, sticking, darting, shifting from one place to another, at times "all over the body." The patient is apt to be restless, lies down, rolls about, cries, moans, goes through contortions. Difficulty in breathing is complained of and is illustrated by manifestations of strangling or choking or by frequent sighing inspirations. The attack may last from a few minutes to several hours.

I shall not enter into a discussion of the differentiation of angina pectoris from other diseases, such as gallstones, ulcer of the stomach, irritable bowel, pleurisy, vertebral caries, pressure as from tumor or aneurysm, tumors of the chest wall, tabes. But I must call to mind that one must remember the possibility that there may exist along with the angina one or even more of these other conditions. I have seen angina in a patient who had gallstone colic and have seen it associated with the pains of duodenal ulcer. And the real angina may have so many nervous or hysterical attendants or sequelæ as to be very confusing, unless one can see the patient in an attack.

Recently I studied for a few days with reference to possible surgical treatment a case of angina in a woman of about sixty. The attacks had existed for some four years, had been severe and easily

provoked. I had seen her seven months before and had been a witness to a paroxysm clearly genuine and very painful. The attacks were now said to be more frequent and to be provoked especially on moving the left arm. Careful investigation showed that, since she had taken the iodidé I had prescribed, the old substernal attacks had been less frequent and not so excruciating. The pain in the left arm was due chiefly to a traumatic neuroarthritis (several weeks before she had fallen down stairs, striking her shoulder), as evidenced by limited and extremely painful motion of the left shoulder joint with local tenderness.

#### PROGNOSIS

The outlook is bad enough, though not by any means as bad as many physicians and lay people think. A few years ago in a study of some 200 cases in my own practice the duration of life from the onset of symptoms to death, which was usually sudden, was about two and one-half years.<sup>2</sup> But I have patients who have recovered, others who are under observation after five and ten years, though still with the symptoms. I know no sure way of predicting the outcome in a given case. The more frequent and the more severe the paroxysms, the more easily an attack is provoked, the worse the outlook. So, too, if there are high blood pressure, large heart, gallop rhythm, abnormal electrocardiogram, nocturnal cardiac asthma and beginning dyspnea on exertion, the outlook is bad. I am not convinced that the cases on a syphilitic basis are more favorable because more amenable to treatment, but I am inclined to think this is true.

But after all is said, we must conclude that a prognosis in angina is little more than a guess, the patient dying perhaps as you are examining him, an experience I once had when a man's aorta ruptured in clinic; or thirty minutes after leaving your office, as once happened to me; or as in another case meeting you later and gleefully telling you of your evident mistake in diagnosis, because here he is three years after you told him he had angina and he has only mild spells, etc. You try to suppress a wicked sense of triumph a year later when you read of his sudden death in California from "acute indigestion," but you wonder why the one man lived thirty minutes and the other four years. One practical point. Tell some relative or friend of the patient, so that the family may have some warning as to what to expect, for they are

2. Herrick and Nuzum: Angina Pectoris, etc. Jour. Amer. Med. Assn., Jan. 12, 1918, Vol. 70, pp. 67-70.

entitled to this, and it is wise as a means of self-protection.

#### TREATMENT

As to treatment, may I repeat what I have recently written elsewhere?

Assuming that the physician has made his diagnosis of angina pectoris, what shall he say to the patient as to the nature of his malady?

Recently I ran across two statements that fairly well illustrate the diametrically opposed practice of many physicians regarding this disease. In a meeting of a state medical society in 1922, a well-known physician from a large city is reported to have said: "My own method for years has been to tell these patients plainly that they may die suddenly, to make their wills, and have no further responsibility requiring anything of that kind, so that no unusual loss will fall upon their families." Another physician, likewise from a large city, in a state medical meeting in 1919, said: "I make a practice of telling my patients frankly, lying cheerfully, that they are going to get better, minimizing the gravity of the disease."

If we are obliged to choose between cheerfully lying and promising improvement or recovery, or bluntly telling a man at once to make his will, we must unhesitatingly decide in favor of the latter plan. Lying in medicine, even though practiced with the laudable object of helping a patient, is not only dishonest but is a poor policy. What we should aim to do is, without lying, to convey to the patient as correct and complete a notion of his ailment as he can comprehend and to speak as hopefully of the future as the facts warrant. To send a man with angina from the office with only the dark side presented—the recurrence of attacks, the sudden death, the necessity of making the will—is to rob him of a hope to which he is entitled, and is in reality a misrepresentation or a lying, if you please, as reprehensible as to promise a cure where cure is improbable. Recovery has been seen, improvement is common, and the patient should not be depressed by an absolutely hopeless prognosis.

As Osler has well said, the physician may properly dwell upon the case of John Hunter, who lived for twenty years, rather than on the case of Arnold of Rugby, who died in his first attack. To explain too much in detail to a patient not intelligent enough to understand is often more harmful than to speak dogmatically as to what to do without advancing reasons. On the other hand, to omit reference to

the serious nature of the illness, to minimize its gravity too much, is liable to lead to carelessness on the part of the patient as to habits of living, and may cause unfortunate results. Unusual tact is required of the physician who handles these cases, for he must tell the truth, but tell it in such a way as not harmfully or unnecessarily to alarm the patient, and yet so as to insure his cooperation in the proper carrying out of the details of the management. The doctor who advises the patient to make his will does it, we are sure, not in the blunt, almost brutal way implied by the reported remarks but in a tactful manner, giving a minimum of alarm, and we know he sends his patients from the office with the feeling that the illness, even though serious, is not without its element of hope.

After all there is no routine practice in this respect. No two doctors will tell the same facts in the same way. One must talk to one patient in one way, to another in another. One must individualize in the treatment of angina pectoris as in the treatment of any other disease, and in no respect more than in telling the patient the nature of his illness, the outlook, and the manner of its management.

Nearly every attack ceases, if the patient stops and sits or stands still. Nitroglycerin, gr. 1/100 to gr. 1/50, is of great service in warding off the attack or lessening its severity. Have the patient chew it before swallowing. Do not promise too much from the use of the nitrites, for in some instances the results are disappointing. Morphine or chloroform is occasionally necessary.

I may condense what I would further say as to treatment. Of greatest importance is the insistence upon moderation—moderation as to physical activity, mental strain, eating, drinking, smoking. It is gratifying to see how in many instances there is marked improvement when the strenuous life is exchanged for the calmer life. I tell my patients they must not any more exceed the speed limit. Instead of running thirty or even fifty miles an hour, they must come down to twenty.

We may do much good in the management of cases of angina pectoris. Schmidt is right, when he says the treatment of this disease is a thankful task. I often think in this connection of the woman who some seven years ago came in to report her improvement. She still had the large heart, the high blood pressure, the murmurs due to sclerosed valves and aorta, and she still had typical attacks if she tried to walk too fast or to do too much. Iodide

and digitalis had, I am sure, helped her; but I am also sure she was right when she said that the greatest service I had rendered her was that I had told her how to live, how to eat, to sleep, to walk, and how not to try to manage all the social affairs in her little home town. She had had three years of relative comfort. Often the greatest service to the patient with angina is to teach the proper mode of life.

A practical point. Exercise after a heavy meal is apt to provoke attacks. Therefore, have the patient rest after the heavy meal or better let him eat a small meal rather than a large one. The amount of exercise a patient *may* take is largely determined by what he *can* take. Stop short of bringing on an attack is good advice and is generally understood and followed, for the patient learns by experience about how far and how rapidly he can walk before suffering pain.

There is no drug that is a specific. The effect of the nitrites is of brief duration, helpful in some cases during the seizure, of comparatively little value when given over a long period. Diuretin, theocin, euphyllin have warm advocates and there is theoretical, experimental and clinical proof to warrant their trial. The two drugs that seem to me of greatest value are iodine and digitalis. Iodide of potassium or sodium, even in the nonsyphilitic cases, is often helpful. How it works need not be discussed. In moderate doses, 20 to 40 grains a day, it often lessens the frequency and severity of the paroxysms and may be continued over a long period of time.

With dyspnea, cyanosis and other signs of a failing heart digitalis may be prescribed with little fear of aggravating the pain. Occasionally, however, a strange phenomenon is seen. A patient with angina may have a cardiac weakness develop; it may be attributed to a dilatation of the heart, to a coronary obstruction, to myocardial weakness or to auricular fibrillation. With this failure on the part of the heart are associated dyspnea, cyanosis, cough, etc., but the remarkable thing is that the pain may disappear. This has been observed by many. In some of these cases a too free use of digitalis by restoring the heart's tone brings back the old paroxysms. It may, therefore, be necessary to exercise judgment as to the use of digitalis. But usually with the evidence of failing heart it may be given; and in some instances it helps to relieve pain, perhaps by improving coronary circulation.

In cases on a syphilitic basis the use of antisyp-

ilitics, like arsphenamin in large intensive doses, is to be deprecated. Small doses of mercury, then iodides and later the arsenical preparations, beginning with small doses, are safer than the initial large intravenous dose of arsphenamin. For following the large dose, the local reaction in a syphilitic coronary, the Herzheimer reaction, may occlude the vessel with disastrous results. And weakening of the aortic wall has sometimes seemed to follow the too vigorous use of the remedy in aneurysm or luetic aortitis.

In bringing to the Pacific Coast any advice regarding surgery for the relief of angina I speak with hesitation for so much of the earlier work has been done here that we from farther east ought modestly to appeal to you for opinion rather than to venture our own. In selected cases with intense suffering which have resisted treatment by regulation of habits and by drugs and when life is becoming almost intolerable, surgery is worthy of trial. There can be no question that great relief has thus been afforded some of these sufferers who, from being incapacitated from work and deprived of all pleasure of living, have been rendered capable of getting about, of working and of enjoying existence. There is, however, so much that is yet obscure as to the anatomy and the physiology of the nerves involved, such variation of opinion as to what nerves or ganglia should be resected, such inherent difficulties and dangers involved in the operation, that no definite rule as to how to operate can be laid down.

That the operation does not remove the cause is admitted, but the same may be said of the use of nitrites or morphine. It may be true, as Mackenzie says—I am not sure about this—that by doing away with pain there is removed the signal that warns the patient of approaching danger. But the sufferer from the severer pangs of angina will gladly run the operative risk, if he can be relieved from the daily torture that is slowly killing him and the relief of pain may work more beneficially than we realize. Pain may, as Allbutt contended, work harmfully, even fatally, by overexciting vagal inhibition. Or it may hypersensitize the cardiac, aortic and sympathetic nerves, spinal segments and psychic centers, until the threshold to pain has been worn so low as to be easily passable by even the most trivial irritant. Bad nerve habits thus become chronic and are not only annoying but, as stated, a source of danger. So, in selected cases, the competent surgeon may properly be called in to

resect the depressor nerve, sympathetic branches or the ganglia with a reasonable prospect of his affording help.

#### PATHOGENESIS

The two theories that today are most prevalent are those that make the changes in the coronary artery the important feature and those that ascribe to the aorta the predominant part. Ever since Jenner and Parry called attention to the marked changes in the coronary artery in cases of angina pectoris (illustrated in the famous case of John Hunter), pathologists and clinicians have ascribed an essential role to these arteries. In cases in which at autopsy no such change was to be found, a vascular spasm was assumed to have been present. The striking resemblance between the phenomena of intermittent claudication (thromboangiitis obliterans), as seen in the lower extremities, and the anginal attacks has been repeatedly and as it seems to me very properly pointed out. In each condition there is apparently, until late, enough blood for the part while it is relatively at rest. But upon increased muscular activity the obstructed arterial channel is unable to furnish the requisite amount and relative ischemia with pain results. From the time of Allan Burns, who more than a century ago advanced this explanation, to the present when physiologists are trying to imitate the condition by experiment, the "intermittent claudication of the heart" theory of angina pectoris has passed as the most nearly valid explanation of this serious malady.

However, some dissenting voices have always been heard, and especially of late has this view been vigorously challenged, among others by Allbutt in England, Vaquez in France, R. Schmidt in Germany and Wenckebach in Austria. While admitting that diseased coronaries are often found, or even admitting that the diseased coronary may be the immediate cause of death, these writers declare that the essential lesion of pain is aortic. If at the autopsy attention is not too much focussed on the coronary, quite uniformly there will be found disease in the first portion of the aorta, generally atheromatous or syphilitic, with changes to be made out especially in the middle and outer coats of the vessel. These, it is contended, are the lesions of pain; the coronary lesions are concomitant, secondary or complicating, though perhaps fatal. On exertion, as on walking, or under psychic urge, the heart increases its work, the blood pressure rises (some have recently contended through capillary and peripheral arterial contraction), the suprasig-

mold aorta stretches, the rich network of highly sensitive nerves in the diseased middle and outer coats is thus irritated and conveys to the cord segments and the brain the impression of an exaggerated irritation, and the substernal pain is the result; in many instances, through the intensity of the irritant, there is an involvement of neighboring segments and a more extensive reflection of pain, as to the neck or arm.

In a sense the question is largely an academic one. It has been and still is largely discussed in the way of argument rather than by experiment. Proof of the subjective sensation is hard to obtain from experiments on lower animals. It is hoped that by the careful study of the human cases operated on something may be learned as to the nature of the pain. Some operations may be viewed as justifiably experimental.

Wenckebach, who admits the coronary artery origin for angina with acute coronary obstruction, sums up the argument for the aortic theory by saying: "All factors which ensure a greater filling of the aorta, thus increasing the stress on its wall, will give rise to pain, so long as the heart is equal to its increased task." "Every influence which lowers the action of the heart, diminishes its output, allays excitement, releases peripheral vasoconstriction, reduces abdominal tension, will help in bringing an attack to an end." He recalls also that the distribution of the pain is, according to Head, that of irritation of the aorta rather than the heart itself. "*Entzündung und Dehnung*" is the explanation, says Schmidt, referring to the aortic wall.

But in our eagerness to follow some new and attractive theory that has in it elements of truth, are we not inclined too readily to cast aside that which is old, just because it is old? Is there any inherent reason why the pain of angina must be due to one cause and may not be due to two or more? Need we, should we, ignore as we are inclined to do today the important part played by the coronary artery in causing symptoms—including pain—in angina pectoris? The aortic advocates admit the coronary origin of the pain in acute coronary obstruction. To say that, even though the pain may originate in the coronary lesion, its path of transmission is by way of nerves that traverse the arterial wall is begging the question; it is the origin of the pain that is under discussion. When told that many diseased coronaries are found in people who have never had angina during life, we may retort that many a diseased aorta is found though there is no history of pain. To state that the coronaries are phylogenetically offshoots of the

aorta and that coronary pain is, therefore, in reality aortic pain is again begging the question. We cannot entirely overlook the frequency with which at autopsy diseased coronaries are found, the frequency with which aortic disease obstructs the coronary orifices.

Nor can we pass lightly by the remarkable resemblance between the phenomena of intermittent claudication and the anginal paroxysm and the occasional association of the two conditions in the one patient. Nor can we ignore the equally remarkable effects of coronary dilators—nitrites, theocin, euphyllin, etc. And when a coronary artery is thrown out of commission by an acute obstruction and when following this, pain ceases, may we not as well argue that the seat of the pain or the lesion of the pain was the artery or the muscle supplied by the artery and that pain has gone because the tissues have ceased to function; they are to all intents and purposes dead? It is as well to argue this as to assume that because of weak musculature the strain on the aorta is lessened and pain ceases. One may grant that aortitis without coronary involvement may cause anginal pain or even that in other cases pain may be aortic. We may with Osler stress the fact of the practical identity of heart and aorta, view the heart as an enlargement of the vessel or the vessel as an elongation of the heart. The cause may be now more in one than in the other. There is no sharp dividing line between aorta and heart. Moreover, the coronaries contribute to the blood supply of the first part of the aorta.

The question of the origin of the pain is not trivial. It is interesting from a scientific point of view. Its solution may have practical results of farther reach than we can now see. But at times, in reading the long drawn out, fine spun academic and wordy discussions between the coronarians and the aorticicians, one is reminded of the momentous question as to the proper way to open the egg and the heated arguments that arose therefrom (was it not Swift who recorded them?) between the Big-Endians and the Little-Endians. Or one is tempted to cry out with Mercurio, "A plague on both your houses."

Lack of time has made it impossible to cover the whole field completely. I have been obliged to choose what features to stress at the expense of others. To one who feels these many deficiencies I suggest that he read the masterly address of Wenckebach<sup>3</sup> given in London last year; or the sug-

gestive articles by R. Schmidt,<sup>4</sup> written in 1922. And the Lumleian lectures, delivered by Osler<sup>5</sup> in 1910, full of historic and clinical detail, are ever fresh, ever inspiring.

3. Wenckebach, K. F.: Angina Pectoris and the Possibilities of Its Surgical Relief. *Brit. Med. Jour.*, May 10, 1924, pp. 809-815.

4. Schmidt, R.: Aortalgia. *Med. Klinik*, XVIII, Jan. 1 and 8, 1922.

5. Osler, Wm.: The Lumleian Lectures on Angina

**Tetra-Ethyl Lead Poisoning.** The manufacture and handling of tetra-ethyl lead, resultant on its recent development for important industrial purposes, has brought about the appearance of a type of lead poisoning which, because of its unique character, is the subject discussed by Robert A. Kehoe, Cincinnati (*Journal A. M. A.*, July 11, 1925). In man, poisoning is produced as a result of the inhalation of the vapor of tetra-ethyl lead, and also as a result of skin absorption. It may be produced accidentally or carelessly by ingestion, but in the industrial handling of tetra-ethyl lead such a source of poisoning is not encountered to any important degree. Usually, illness in men has been the result of the combination of skin absorption and inhalation of vapor over a considerable period of time. However, an acute, even fatal poisoning may result from exposure either to a high concentration of vapor for a comparatively short time (several working days) or to a large quantity allowed to remain on a large skin surface. Insomnia is one of the earliest and most troublesome symptoms. Nausea, anorexia and vomiting are most pronounced in the early morning. A sickening taste, not described as metallic, contributes somewhat to the development of these symptoms. Vertigo and headache are not pronounced in most cases, though something approaching them, in the form of a dull full feeling in the head, is often complained of. Some degree of weakness is a constant finding, and is commonly a very persistent complaint. It does not appear until the insomnia and anorexia are well established, and appears to be due in most cases to inadequate rest and food. Itching of the skin is an occasional disturbing symptom. Objective signs are pallor, subnormal blood pressure, subnormal temperature, loss of weight and tremor. There is no characteristic blood finding. The appearance of a lead line on the gums is not a constant, nor even a frequent, finding. Urinary findings are meager except for the presence of lead. Lead is excreted in larger quantities than is seen in most cases of lead poisoning. Excretion occurs by way both of the kidneys and of the alimentary tract. Usually the excretion in the feces exceeds that in the urine for a corresponding period of time. However, in one case the urinary excretion uniformly exceeded that of the feces. The quantity excreted in a twenty-four hour specimen of urine has varied from nil up to 8.4 mg. of lead. The diagnosis of tetra-ethyl lead poisoning is to be made from a careful consideration of the symptoms and signs, together with a history of exposure. Variations in the symptomatology of tetra-ethyl lead poisoning, as opposed to ordinary lead poisoning, arise either from a unique distribution of lead in the tissues or from a great difference in the actual quantities present in the body. Assuming the correctness of these conclusions, the treatment of tetra-ethyl lead poisoning need not differ from the treatment of lead poisoning of other types. The actual treatment employed by Kehoe consisted of the administration of mixtures of sodium bicarbonate or sodium citrate, magnesium oxid and calcium carbonate in quantities sufficient to make and maintain neutrality of the urine.

## CLINICAL OBSERVATIONS ON THE EFFECT OF INSULIN\*

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### INTRODUCTION

Insulin has been used with uniform success throughout the civilized world as an aid to the dietary treatment of diabetes ever since its discovery by Banting and Best in 1921. It was first used in the Medical Clinic of the Peter Bent Brigham Hospital on September 30, 1922, and during the ensuing interval of time a variety of clinical studies have been made there in regard to the manner of the drug's reaction upon the diabetic patient. This paper summarizes the practical features of these observations in order to illustrate why insulin is so effective in the management of certain diabetic cases.

### INSULIN AND SUGAR METABOLISM

The most striking immediate effect of insulin is upon the sugar metabolism. Table 1 gives illustrative blood sugar curves, obtained in three diabetic cases, following a single insulin injection. In each instance the blood sugar concentration fell appreciably after the administration of the drug. In each case the rate of the reaction was variable. One chart shows that a slight effect was obtained within fifteen minutes of the injection. The other two charts show that the blood sugar reading had continued to diminish between the third and fourth hours after injection. Repeated observations, such as these, have shown that the effect of a single insulin injection upon the blood sugar may be almost immediate and lasts usually for several hours. On the other hand, no two cases appear to react in exactly the same fashion.

The variability of the rate of an insulin effect on blood sugar concentration after a single injection is influenced by certain factors which are not wholly clear. Two, however, are fairly well established: patients with an infection of any sort, and patients with acidosis are unusually tolerant to the drug.

Table 2 illustrates the effect of an acute infectious disease upon a diabetic patient's tolerance to insulin. The patient was a middle-aged woman, with a mild diabetes complicated by typhoid fever. The chart was constructed from data obtained during the end of the febrile period and during the time of convalescence, when the patient was able

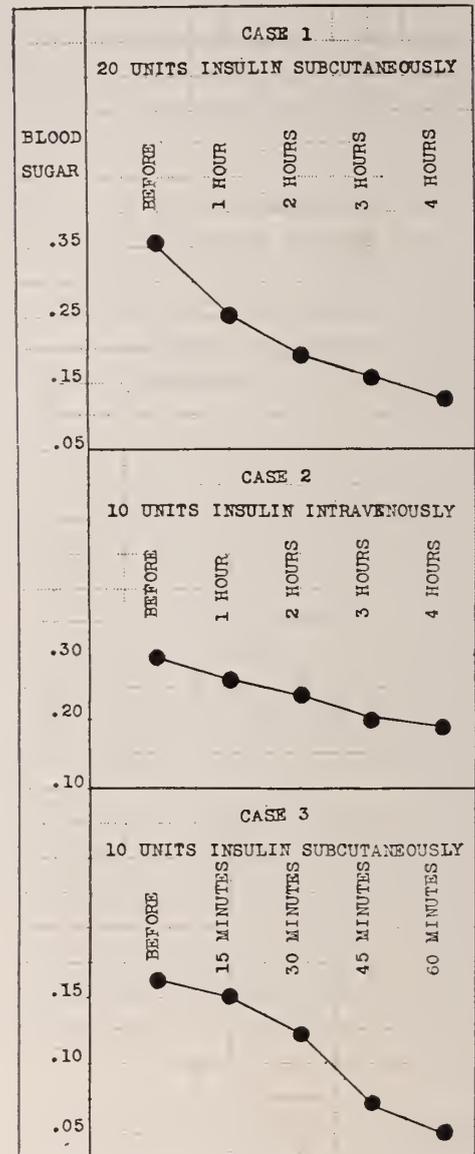


Table 1.

The immediate effect of insulin upon blood sugar concentration.

to eat all food given. During the febrile period more than ten times as much insulin was necessary to keep the urine sugar-free on a constant diet than was later needed, and the fasting blood sugar concentration was at a much higher level. As the infection subsided, a smaller dosage of insulin seemed much more effective than during the course of the fever.

Table 3 shows the insulin dosage used in a case of acidosis. Relatively large doses of insulin were given during the period of acidosis, in spite of which the tolerance, as judged by the glucose balance, remained low, and the fasting blood sugar concentration stayed high. Later, after the acidosis was overcome, the glucose tolerance, as judged by

\*Read before the Fourth Annual Meeting of the Pacific Northwest Medical Association, at Portland, Ore., June 29-July 1, 1925.

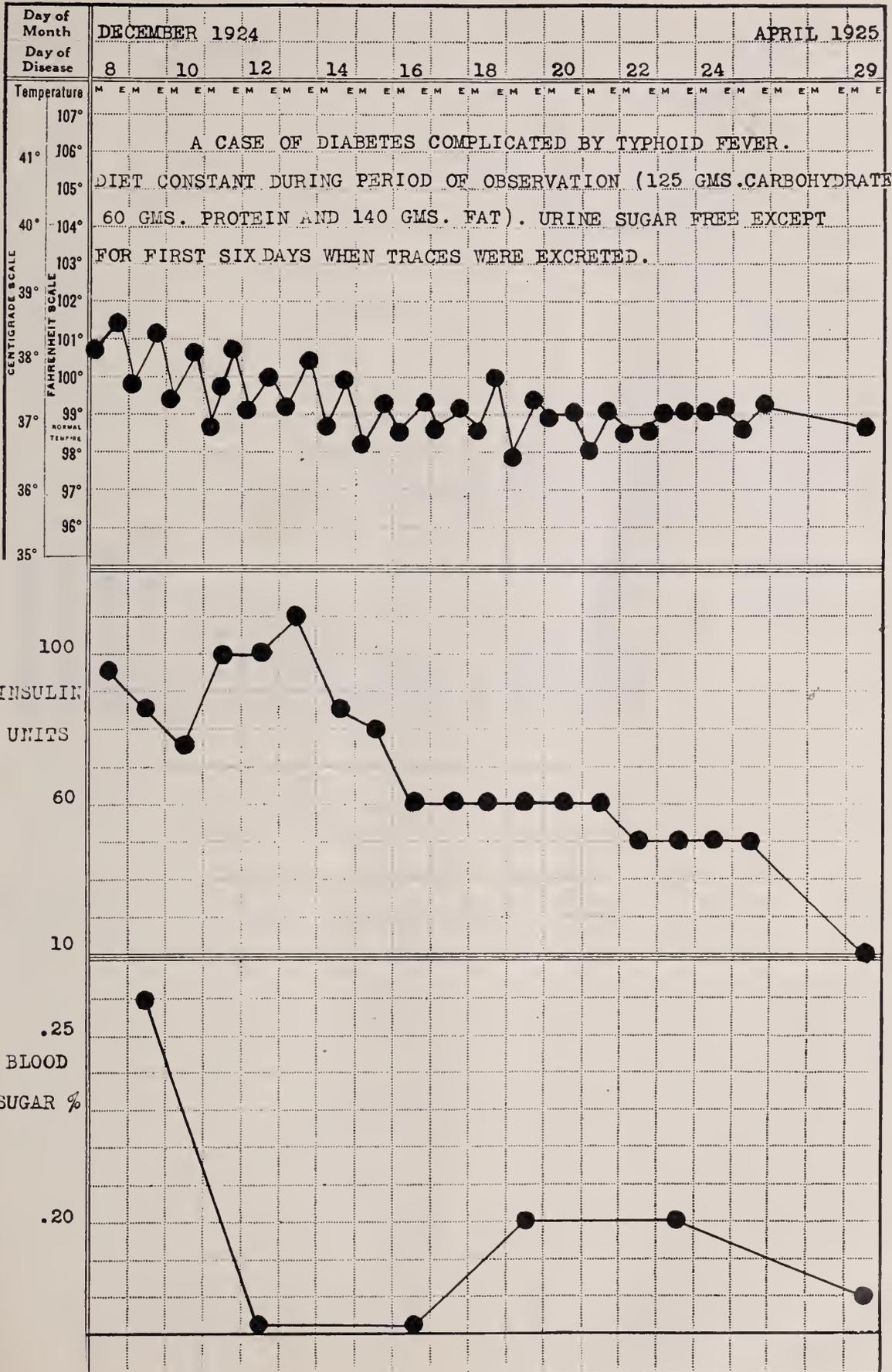


Table 2. The effect of infection upon the activity of insulin.

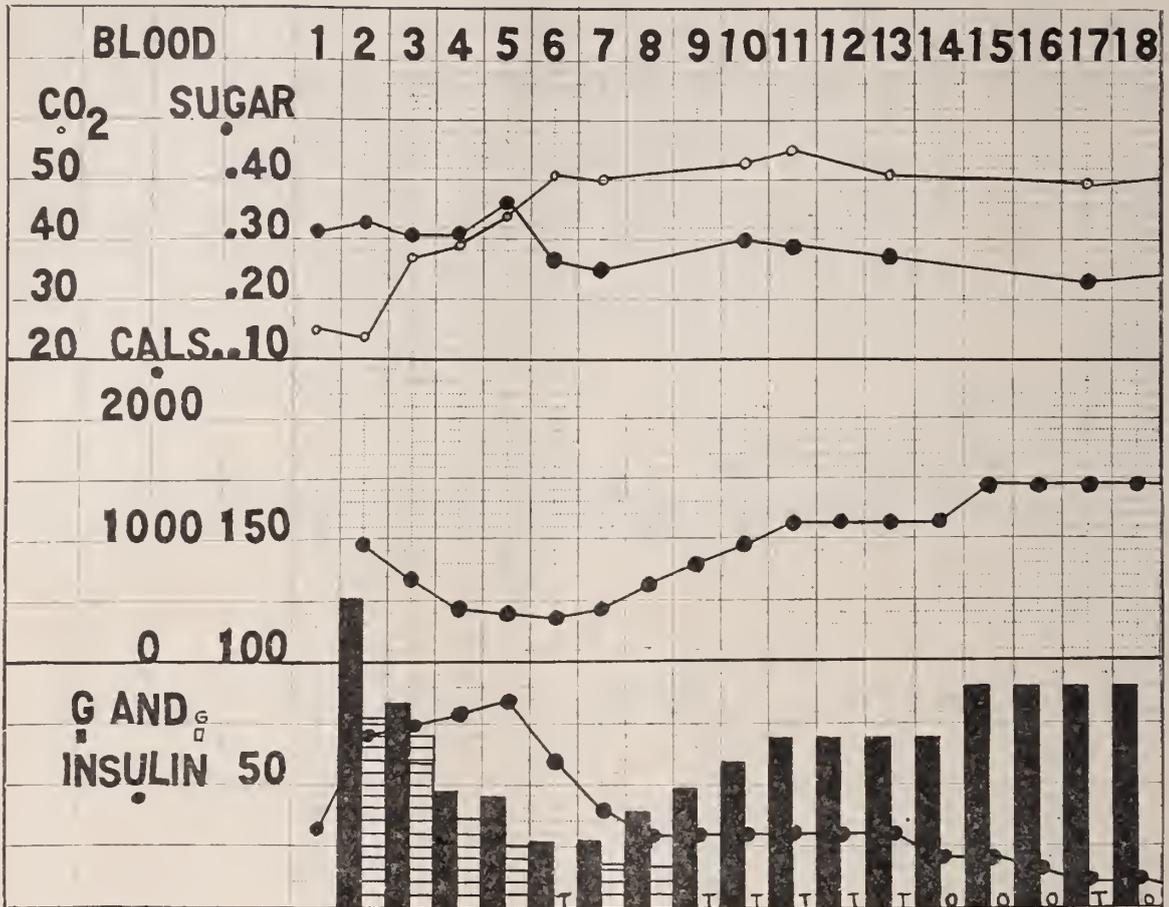


Table 3. The effect of acidosis upon the activity of insulin.

In this chart the solid line in the upper space represents the blood sugar concentration and the dotted line the alkali reserve of the plasma in volumes per cent. In the second space is plotted the daily caloric intake. In the third space the solid columns repre-

sent the available glucose, in grams, of the diet estimated from Woodyatt's formula, and the cross-hatched columns represent the daily excretion of sugar, in grams, in the urine. The dotted line represents the daily dose of insulin in units.

the same standards, increased, the urine remained sugar-free and the blood sugar concentration fell upon less insulin and a higher diet, so that a smaller dosage of insulin seemed more effective than during the period of acidosis.

The necessity for heroic doses of insulin in the treatment of coma is generally recognized. This may depend in part upon the facts that many cases of coma have a complicating infection, or perhaps because no case with any tolerance ever becomes comatose. On the other hand, it is possible that insulin, like other enzymes, works to best advantage at a certain optimum hydrogen-ion concentration which is slightly alkaline rather than acid.

Table 4 presents data from an experiment carried out to test the effect of an alkaline medium upon the effectiveness of insulin. The patient, who had been under observation for several weeks, was given a constant diet and an amount of insulin just sufficient to keep the urine sugar-free and the fasting

blood sugar at a constant level. After this preliminary period of observation, she was given the same diet, with the addition of fifteen grams of bicarbonate of soda each day, so that the urine was kept constantly neutral or slightly alkaline to litmus. At first under such treatment the fasting blood sugar concentration became lower, and later a considerably larger glucose intake than during the control period was tolerated without glycosuria or hyperglycemia.

Experiments of this type are extremely difficult to draw conclusions from, since so many variables are introduced. It is suggested however, that insulin is more active in a slightly alkaline medium than in a slightly acid one, and that the acidosis of diabetic coma with its accompanying relative acidity of the tissues and body fluids may be an important reason for the acidotic patient's relative lack of susceptibility to the drug.

Insulin causes glycosuria to diminish or cease

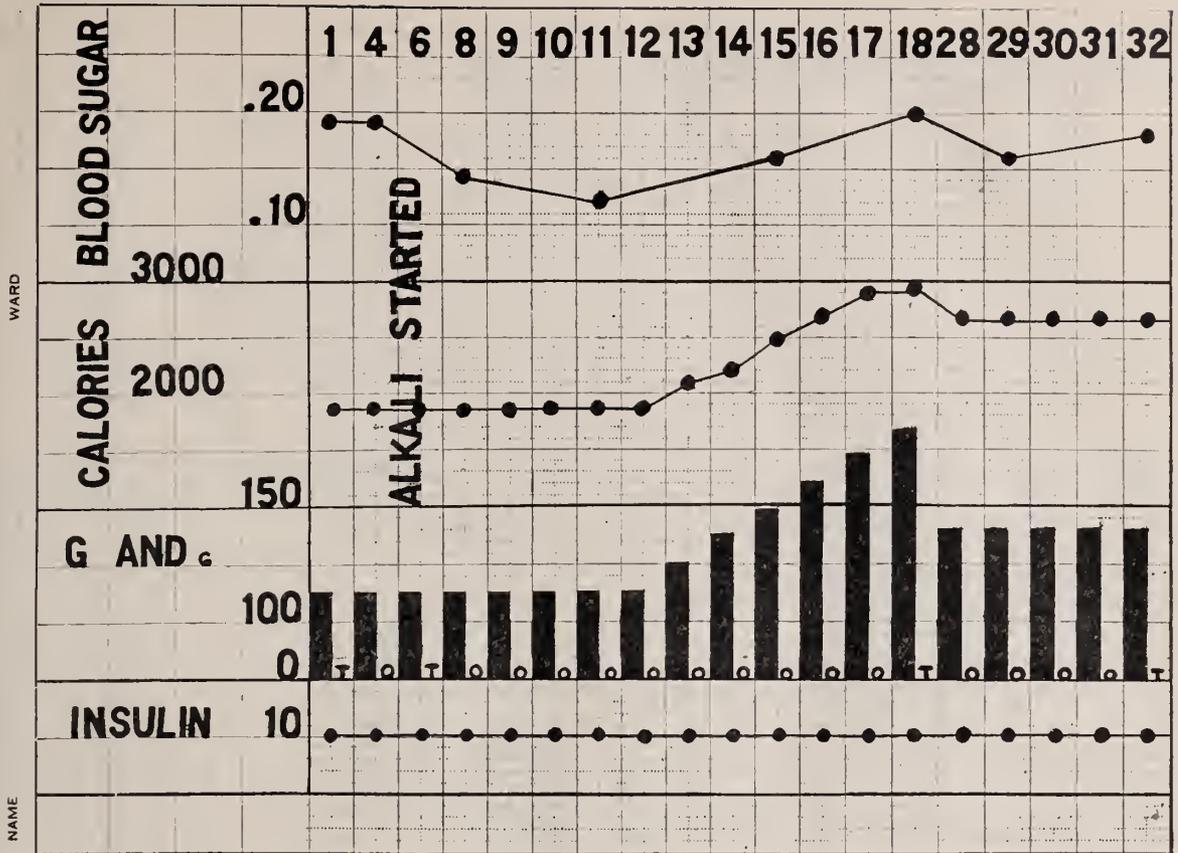


Table 4.

The effect of alkali upon the activity of insulin. In this chart the column in the third space represents the available glucose, in grams, of the diet estimated

from Woodyatt's formula. The traces of sugar which were excreted in the urine on certain days are denoted by T.

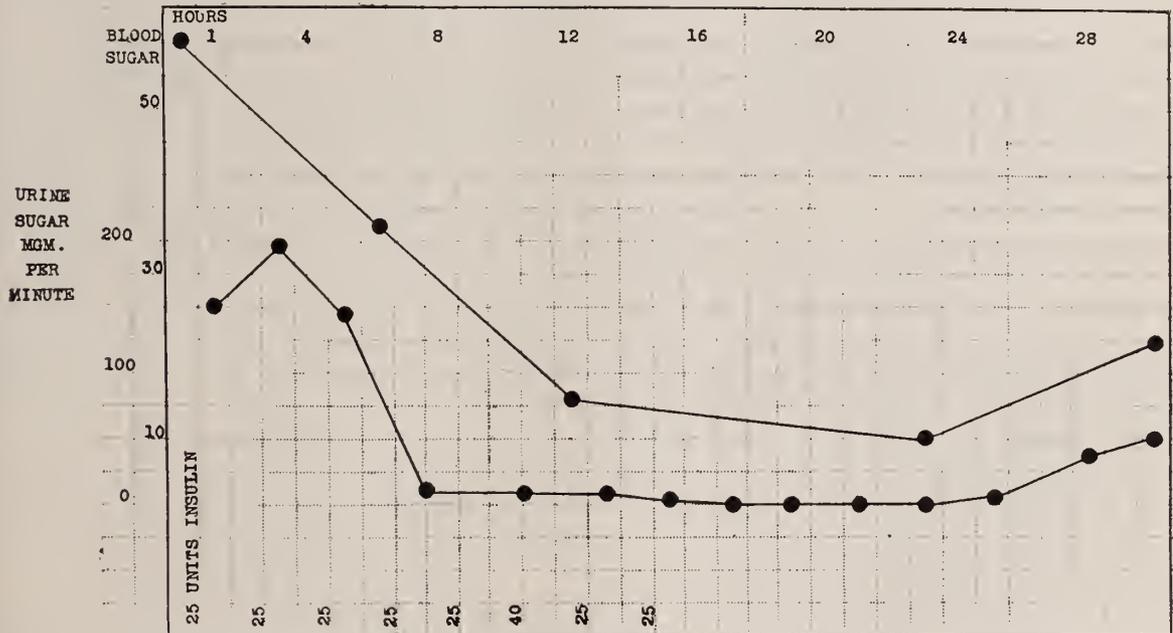


Table 5.

The relation between glycosuria and glycemia under insulin.

at the same time it causes the blood sugar concentration to lessen and does not appear to wash sugar out of the body. This fact is shown in Table 5.

A diabetic patient was given repeated doses of insulin and specimens of urine were obtained each hour or two. The minute-rate of sugar ex-

Day	Diet On Day Before Test				Basal Respiratory Quotient	Remarks
	Carbohydrate gms.	Protein gms.	Fat gms.	Calories gms.		
1.	22	13	18	302	.67	No Insulin
2.	104	63	150	2018	.83	30 Units Insulin on previous day. 10 Units before test.
3.	105	81	180	2364	.86	18 Units Insulin on previous day. 6 Units before test.
4.	106	82	200	2552	.77	No Insulin for previous three days.

Table 6.  
The effect of insulin upon the respiratory quotient.

cretion was estimated during the observation period and was found to diminish in almost direct proportion to the fall in the blood sugar level. Similar experiments have been repeated in other cases with identical results. Besides being of theoretical interest in illustrating one of the pharmacologic effects of insulin, the observation is of practical value in calling attention to the importance of repeated urinalysis in the insulin treatment of diabetic coma. According to our experience, it is as safe to follow the effect of insulin in coma by repeated urinary sugar determinations as by repeated blood sugar determinations, for so long as the sugar excretion diminishes, the blood sugar concentration falls, and as long as the urine contains sugar, the blood sugar level is above normal and hypoglycemia does not exist. One must make sure, however, in following the effect of insulin in this fashion, that the bladder is emptied at each time-interval, for a small amount of sugar retained in the bladder, mixed with a later sugar-free urine, may give a positive test and serious misinformation.

Since insulin causes the blood sugar concentration to fall and does not wash out sugar from the body, its effect must be produced either by the storage or burning of sugar within the body. Gaseous metabolism determinations have shown that insulin causes a rise in the diabetic's fasting respiratory quotient, therefore warranting the conclusion that insulin at least enables the diabetic to burn sugar more readily than is otherwise possible.

Table 6. A basal respiratory quotient determination was made on this patient shortly after his entry to the hospital before insulin treatment was begun. He was then given a liberal diet, the resultant glycosuria and hyperglycemia being controlled by insulin. Finally, the insulin was omitted and a control respiratory quotient determination was made. The quotient was notably higher during the insulin

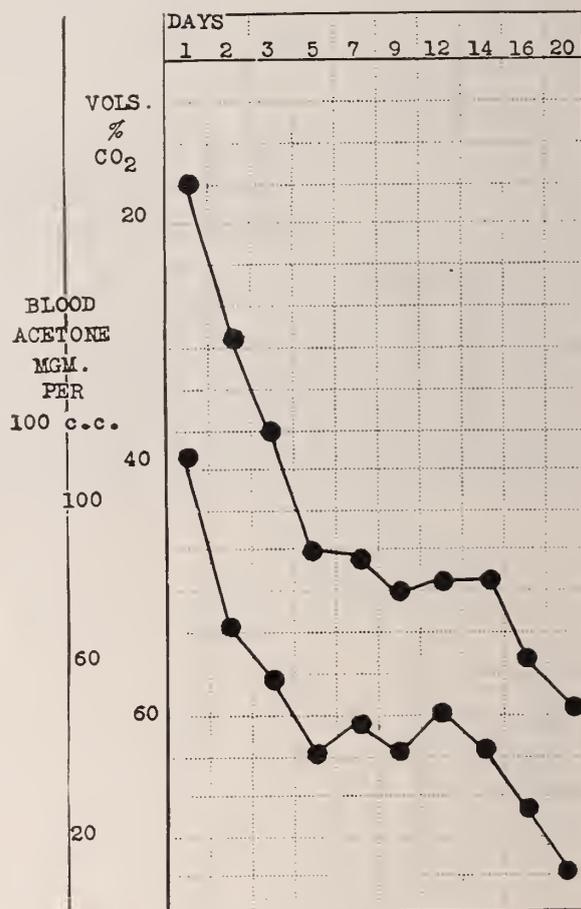


Table 7.  
The alkali effect of insulin.

period than during the control period, pointing to an increased basal glucose oxidation while the patient was being influenced by the drug.

THE ALKALI EFFECT OF INSULIN

Insulin acts indirectly as a powerful alkali in the presence of acidosis due to acetone bodies. This effect is one of its most important attributes in relieving diabetic coma.

Table 7 illustrates the rise in the alkali reserve of the blood plasma and the fall in the blood acetone

Day	Diet			Calories	24 Hour Urinary Excretion of Nitrogen gms.	Remarks
	Carbohydrate gms.	Protein gms.	Fat gms.			
1.	189	89	15	1247	12.2	
2.	102	58	0	640	13.8	
3.	64	33	0	388	13.8	
4.	36	27	0	252	8.5	
5.	15	5	0	80	10.0	
Average		Protein 6.25	per day		Average per day	
		6.8 gms. Nitrogen			11.6 gms. Nitrogen	
1.	22	13	18	302	4.1	5 Units Insulin
2.	30	40	50	730	5.5	9 " "
3.	30	40	60	820	4.7	9 " "
4.	30	40	80	1000	4.2	11 " "
5.	30	40	100	1180	6.9	12 " "
6.	30	40	100	1180	5.3	15 " "
7.	30	40	110	1270	5.6	15 " "
8.	30	40	110	1270	6.3	17 " "
Average		Protein 6.25	per day		Average per day	
		5.9 gms. Nitrogen			5.3 gms. Nitrogen	

Table 8.  
The effect of insulin upon nitrogen excretion.

body concentration of a severely acidotic case under insulin treatment. The close parallelism between the two curves is striking. It is generally believed that acetone bodies are formed from the incomplete oxidation of fat in the absence of sufficient oxidizing glucose and that diacetic and betahydroxybutyric acid act as acids to deplete the alkali reserve of the body. By stimulating the oxidation of glucose in the body, insulin causes fats to be completely burned and prevents the further formation of acetone bodies. As a result, the alkali previously used in neutralizing diacetic or betahydroxybutyric acid is set free and the alkali reserve is increased exactly as if large doses of alkali had been introduced into the body by the intestinal tract or veins.

INSULIN AND PROTEIN METABOLISM

Insulin diminishes protein metabolism. This is demonstrable both by urine and blood analyses and is illustrated in the following tables.

Table 8 records the protein ingested each day and the nitrogen urinary excretion of a diabetic patient treated for five days without insulin and for eight

THE IMMEDIATE EFFECT OF INSULIN UPON THE BLOOD NONPROTEIN NITROGEN, 20 Units Subcutaneously.

Time	Nonprotein Nitrogen mgms. per 100 c.c.
Before Insulin	29
2 hours later	27
4 hours later	14

Table 9.  
The effect of insulin upon the nonprotein nitrogen of the blood.

days with it. During the five-day preliminary period, the patient took in a diet containing approximately 212 gms. of protein, or a daily average of 6.8 gms. of nitrogen, and excreted in the urine a daily average of 11.6 gms. of nitrogen. During the eight days following insulin he took in approximately 293 gms. of protein, or a daily average of 5.9 gms. of nitrogen, and excreted in the urine a daily average of 5.3 gms. of nitrogen.

Table 9 records the effect of a single injection of insulin upon the nonprotein nitrogen concentration of the blood. As the patient came under the effect of the drug, there was an immediate fall in the nonprotein nitrogen concentration so that, when

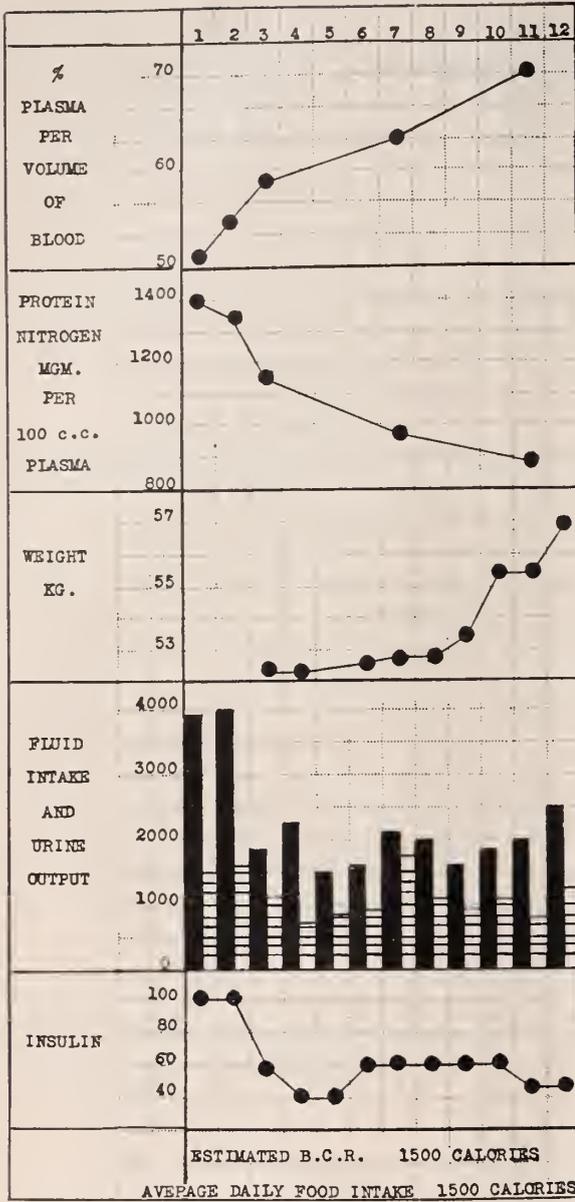


Table 10. The effect of insulin upon water metabolism.

the reaction was stopped by food, the blood nitrogen figure was less than half its original reading.

INSULIN AND WATER METABOLISM

The diabetic patient with acidosis is always desiccated, and often tends to develop an appreciable edema after insulin is first used. The question arises, therefore, as to whether insulin has any specific effect upon water metabolism.

Table 10 illustrates the marked changes which may occur in the water content of the body, following the use of insulin. The patient, a man, entered the hospital on the verge of coma. Insulin caused the blood to become hydremic, as judged by hematocrit and plasma protein determinations. The

THE IMMEDIATE EFFECT OF INSULIN UPON THE PLASMA PROTEIN.

	20 Units Subcutaneously.	
Time	% Plasma per volume blood	Plasma Protein mgms. Nitrogen per 100 c.c.
Before Insulin	62	888
2 hours later	63	874
3 hours later	63	871
4 hours later	62	840

Table 11.

The immediate effect of insulin upon the plasma protein.

weight on a diet merely sufficient to meet the basal caloric requirements increased during the period of observation, suggesting the development of edema. There was a tendency to water retention, as judged by a comparison of the fluid intake and the urine output. The marked dilution of the blood, the relative oliguria, and the gain in weight while under observation all point to a disturbed water balance.

Table 11 gives the hematocrit and plasma protein readings in a diabetic patient, following a single dose of insulin. While there was no appreciable change in the hematocrit reading, the plasma protein concentration diminished slightly, again suggesting that insulin had influenced the water content of the blood to a certain degree.

The diabetic patient with glycosuria and acidosis is living essentially upon a fat-protein diet, because such sugar as is ingested or formed in metabolism is excreted in the urine. A fat-protein diet in itself is known to be desiccating, as shown, for example, by the following data from an experiment on a normal individual.<sup>1</sup>

Table 12. In this subject, the omission of carbohydrate food from the diet resulted in a slight acidosis, a marked polyuria and diuresis and a rapid and immediate loss of weight. That this weight-loss was due to dehydration, and not to starvation, is suggested by a comparison of the basal caloric requirements of the individual and the caloric content of the food actually eaten. The subject required 2200 calories a day to meet his basal needs. Despite an average diet of 3100 calories a day, he lost 4.1 kilograms in weight during the four days of the measured diet.

The rapid storage or oxidation of sugar in the body, on the other hand, is known to cause water retention. This is well demonstrated by the following experiment which illustrates the immediate effect of a single dose of glucose upon the water metabolism of a normal man.

Table 13. A fasting subject was given 125 gms.

1. Quoted from Higgins, Peabody and Fitz: A Study of Acidosis in Three Normal Subjects with Incidental Observations on the Action of Alcohol as an Anti-Ketogenic Agent. Jour. Med. Research, 32, 263, 1916.

Day	Diet				24 Hour Urine Volume c. c.	Fasting Weight Kg.	Fasting Alveolar CO <sub>2</sub> Tension. MM.
	Carbohydrate gms.	Protein gms.	Fat gms.	Calories			
1.		Mixed Diet			1390	71.6	39.1
2.	2	126	293	3151	2450	70.1	36.5
3.	5	143	311	3373	2320	69.5	36.9
4.	0	72	244	2484	2000	68.5	37.3
5.	0	108	293	3616	2080	67.5	35.7
6.		Mixed Diet			980	69.3	38.4

Table 12. The dehydrating effect of a carbohydrate-free diet.

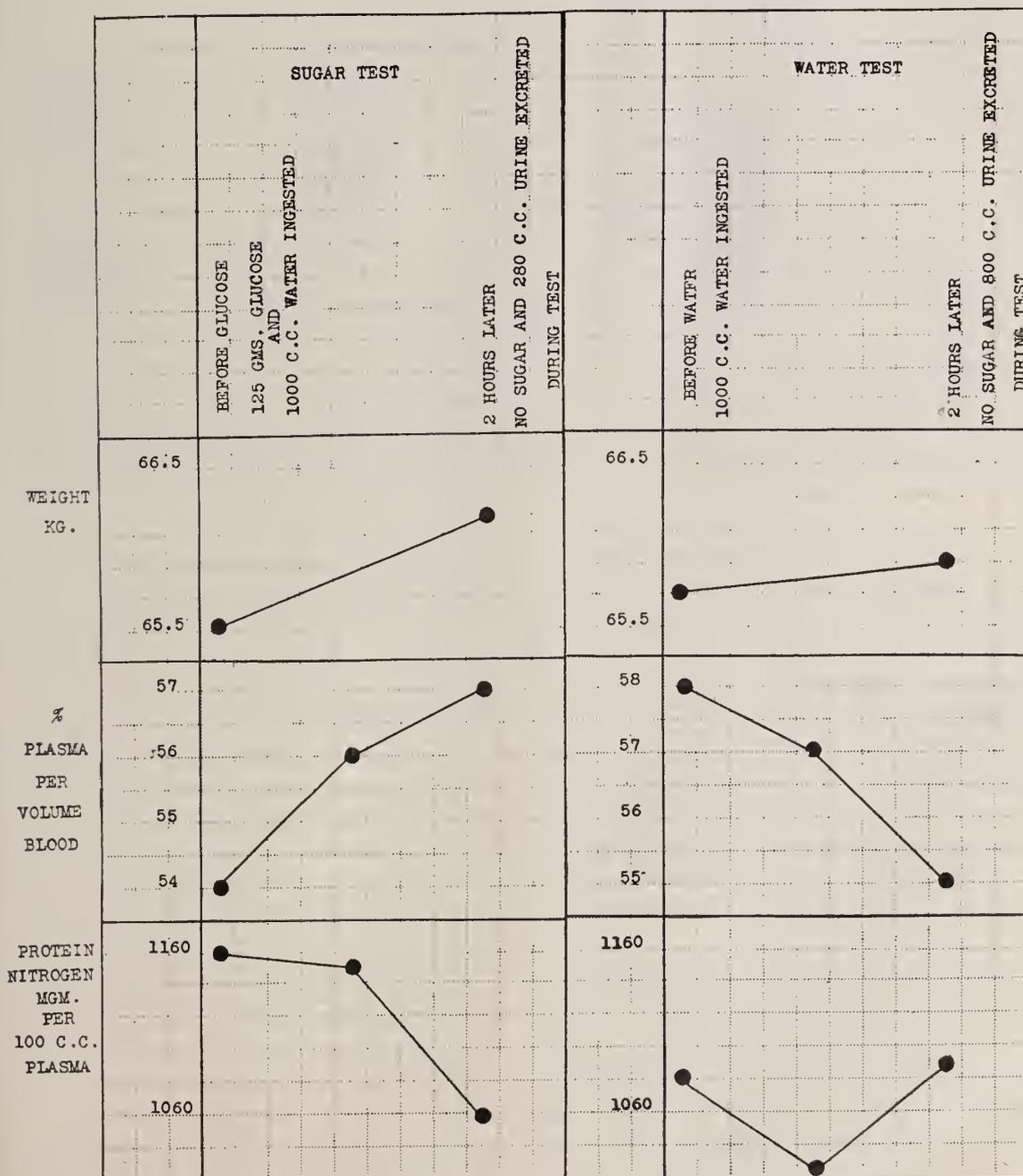


Table 13. The immediate effect of sugar as a means of hydrating the tissues.

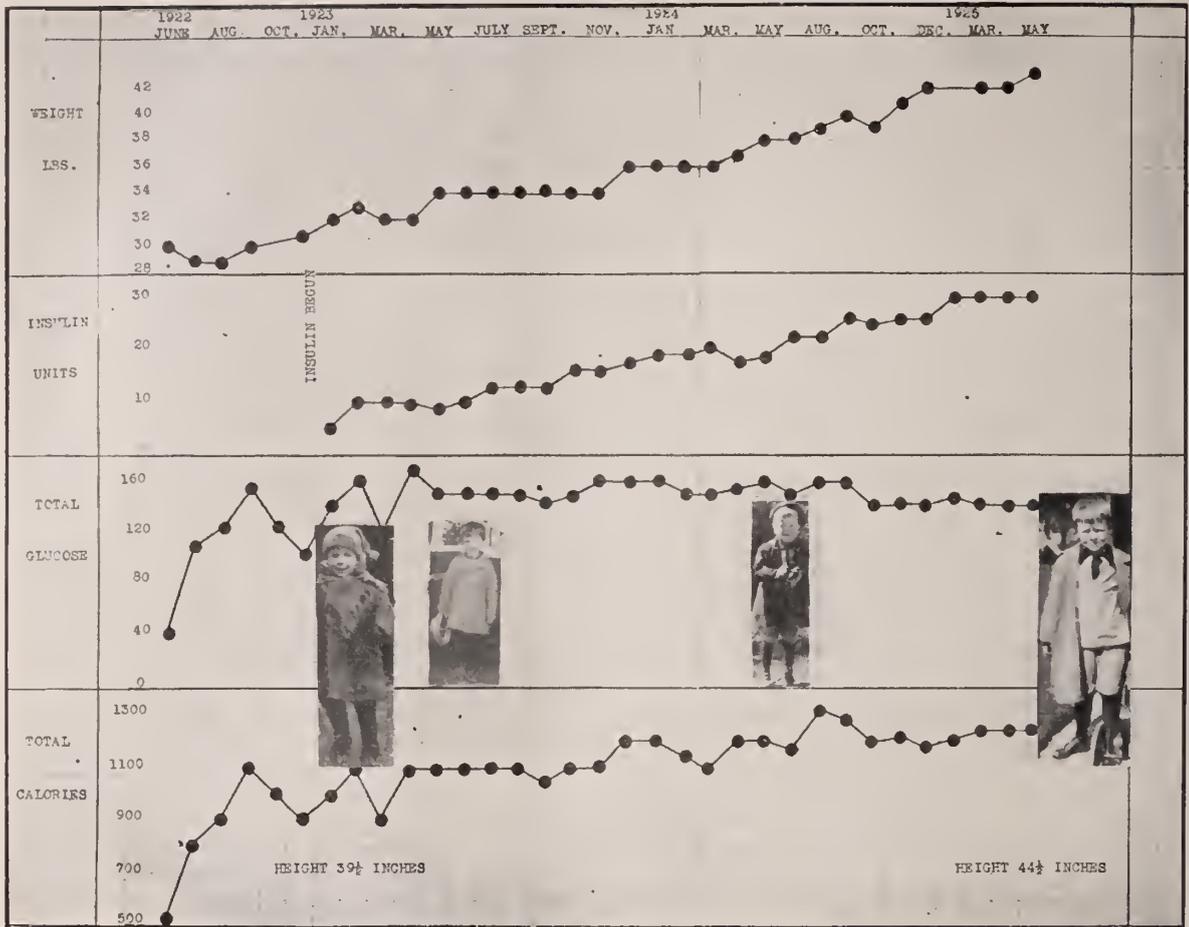


Table 14. The effect of insulin on glucose tolerance in diabetes.

of glucose in 1000 c.c. of water on one day, and 1000 c.c. of water alone on a second day. No sugar and a small urinary volume was excreted during the period of the sugar experiment; there was an appreciable temporary gain in weight and a dilution of the blood, as estimated by plasma protein and hematocrit determinations. During the water day, on the other hand, directly opposite findings resulted. A large volume of urine was excreted; there was but a trivial gain in weight and a concentration of the blood as estimated by plasma protein and hematocrit determinations. Evidently the storage and oxidation of the glucose were immediately accompanied by the holding back of a measurable amount of water.

It seems probable from such evidence that insulin, by allowing the rapid oxidation and storage of sugar in the body, causes the holding back of water in a person desiccated from a fat-protein oxidizing mixture and on that account is an important hydrating agent; whether it has any other effect on water metabolism is at present uncertain.

INSULIN AND THE MANAGEMENT OF DIABETIC CASES  
The value of insulin in the management of

diabetic cases is so well known and its method of use has been so well described by many authors that the plan of insulin dosage and diets, used in the Peter Bent Brigham Hospital Medical Clinic, will not be discussed. Suffice it to say, that our results in the practical treatment of diabetes with insulin have confirmed those of other observers elsewhere. Professor Christian has summed up, in the Brigham Hospital report for 1924, our present attitude toward the drug: Diabetic coma no longer is a difficult problem in treatment. Insulin has made it a condition easily treated and cured, provided the treatment is begun promptly. These patients recover from coma instead of dying, as did almost all in the preinsulin days. Diabetes has always been an easy problem of diagnosis and a disease in general fairly easy to treat except in its more severe forms. Insulin has greatly simplified the problem for the severe type.

One of the most important questions in regard to insulin is to discover whether any diabetic cases can be cured by the new remedy. We have not had any cases under observation for a sufficiently long period of time to justify any conclusions in regard

to this matter. So far as clinical impressions are of value, however, the Brigham Hospital cases which have been carefully followed for any length of time seem to fall into two groups: there is one group of cases which seems to require more insulin as time goes on to maintain the urine free of sugar on a constant diet, and there is another group which appears to have an increasing glucose tolerance under insulin, so that the diet can be steadily increased without a corresponding insulin increase or the insulin dosage can be diminished without any curtailment of the diet.

Table 14 illustrates the clinical course of a small boy<sup>2</sup> with diabetes who has been treated with insulin for nearly two years and a half. Diabetic symptoms developed in December, 1921, when he was about three years old. He has had a trained nurse in constant attendance, nearly every urine sample has been tested for sugar and every morsel of his food has been weighed. Therefore, the data recorded are accurate.

Since insulin was started the glucose content of the diet, estimated by Woodyatt's formula, has been relatively constant. The calories have been increased little by little through slight increases in fat. There has been a steady and progressive gain in weight and height, and a steadily progressive increase in the insulin dosage necessary to keep the urine sugar-free. One gets the impression that, although insulin has enabled this child to grow and to enjoy life like a normal child, yet it has not increased the glucose tolerance nor stimulated the formation of new insulin-producing tissue. Apparently, therefore, the disease has progressed during this interval of time under the treatment employed.

Table 15, on the other hand, illustrates the clinical course of a woman with diabetes who has been treated with insulin for ten months. Diabetic symptoms developed in 1922, when she was fifty-three years old. For the twelve months previous to the first injection of insulin, the urine was never sugar-free. Since she has taken insulin the urine has been constantly sugar-free, there appears to have been a steady gain in tolerance until now she tolerates without glycosuria more than twice as much glucose as when treatment was first begun, and there has been no change in the insulin dosage. Certainly the disease has not progressed during this interval of time and the diabetes seems to be less severe than when insulin treatment was started.

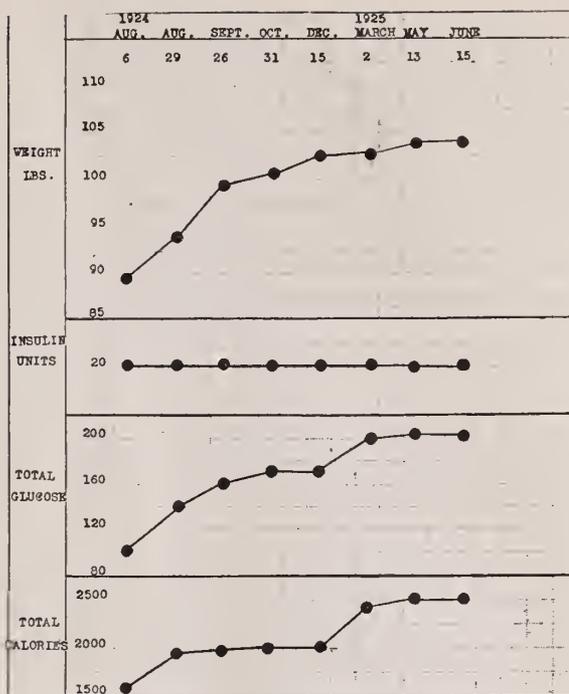


Table 15. The effect of insulin on glucose tolerance in diabetes.

CONCLUSION

On the whole, our present knowledge in regard to the immediate effect of insulin upon the diabetic patient is fairly comprehensive. Insulin lowers the blood sugar concentration by increasing the rate of sugar consumption or storage in the body. Insulin acts as an alkali in diabetic acidosis by preventing the formation of acetone bodies and by thus liberating previously bound base. Insulin spares the breakdown of body protein. Insulin enables the diabetic patient with acidosis to hold back water and to become hydrated. For all these reasons insulin is of the greatest possible value in the practical management of diabetic cases. Whether insulin can cure diabetes is for the future to decide. For the time being we must take a conservative and somewhat skeptical point of view on this phase of the insulin problem and must wait for the reports of a large number of cases carefully followed for a far longer period of time than has thus far been possible.

Author's Note: In this paper I have purposely avoided reference to the extensive literature on insulin. My aim has been to limit myself to a summary of various clinical studies on insulin which have been undertaken at the Peter Bent Brigham Hospital. Several names should appear as coauthors of this paper, especially those of William P. Murphy, Samuel B. Grant, Paul M. Starr, Isaac C. Brill and Professor Henry A. Christian. To the latter is owing an indescribable debt of gratitude for opportunity, inspiration and open-minded criticism.

2. I am obliged to Elliott P. Joslin and Horace Gray for allowing me to publish this chart.

## SURGERY OF THE GALLTRACTS

SOME OF THE MAJOR PROBLEMS  
A CLINICAL DISCUSSION

ROBERT C. COFFEY, M.D.

PORTLAND, ORE.

(Continued)

### PRELIMINARY DISCUSSION

Infection of the gallbladder and ducts constitutes one of the important clinical subjects and it is probably a more serious matter than we are accustomed to recognize. We have today a very interesting case of infection of the galltracts. In order that you may understand it fully, I will take the liberty to rehearse the entire history of this case as far as my experience goes.

On December 10, 1915, I was called to the Portland Surgical Hospital in great haste to see a patient who had been brought to the hospital for an acute abdominal condition with the following history: About the last of September the patient had an infection of his hand, apparently starting in a hair follicle and had a feeling of lassitude after that time.

About December 1 the wound healed. For three months the patient had noticed that he had had some pain under his right rib arch. When I first saw him at the hospital, he had a rigid abdomen on the right side.

As soon as we could get him ready his abdomen was opened over the appendix. The appendix was not diseased, but a seropurulent fluid filled that portion of the abdomen. The incision was extended upward with the expectation of finding a perforating duodenal ulcer. At the upper angle of the wound, we noticed a large inflamed gallbladder with a stone projecting thru a gangrenous spot (fig. 8) near the fundus of the gallbladder. The stone was as large as the last joint of a man's thumb and the gangrenous spot about as large as a half dollar. There were five or six other gallstones with some pus in the gallbladder, but no bile. The gallbladder was incised. The stones were removed and a tube was anchored in the gallbladder without closing the incision tightly. A quarantine was thrown around the infected gallbladder (fig. 9). No attempt was made to do more, owing to the serious condition of the patient. No gallstones could be detected in the common duct, although there was a great deal of inflammation and edema present.

The patient made an uninterrupted recovery. Bile soon appeared thru the tube and in the dressing, showing that the cystic duct was open. The patient went home in the usual time with the understanding that he might have to return later to have the gallbladder removed.

During the first two years, he had an occasional attack of what seemed to be gallstone colic. He said nothing about it until a few weeks ago, when he admitted he occasionally had had chills and fever with the attacks during these intervening years. His general health had been good. He went about his work and ignored the symptoms he had.

About three months ago he had a severe gallstone attack. He came over to have an x-ray examination made, which failed to show any stone shadows. He fully expected to have the operation while here. The attack having passed away, he decided to go home and postpone operation. He would occasionally have a chill with some fever. I saw him a week ago. He was looking like a very sick man. He was urgently informed that he was septic from his gallduct infection and that he should be

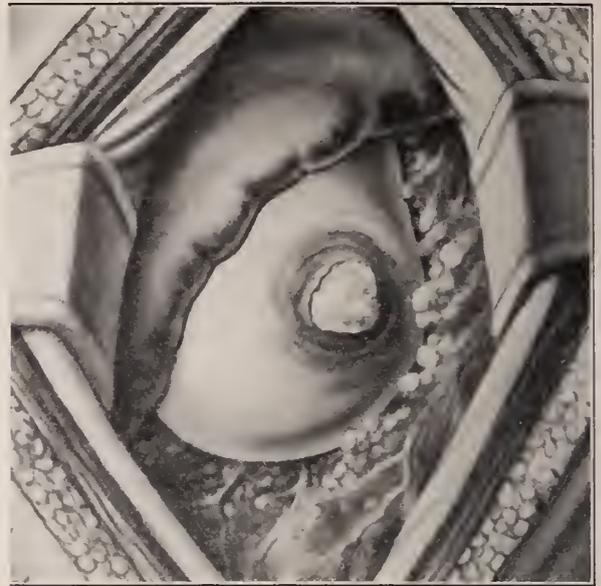


Fig. 8. Acute septic gallbladder with a stone protruding through a gangrenous spot.

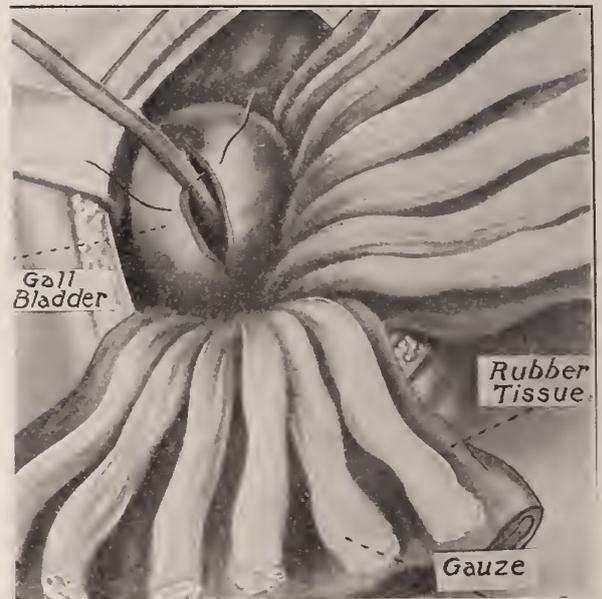


Fig. 9. In an acute septic gangrenous gallbladder with the patient in a serious condition, it is often unwise to do much surgery. Wicks arranged around the gallbladder surrounded by 4-ply rubber tissue form a perfect quarantine after the bladder has been opened and contents removed. Drain holds incision in gallbladder open.

operated upon at once. He returned home again, had a chill, followed by a temperature of 104°F. This alarmed him. He returned and is in the hospital as a patient again.

The question of chills and fever is very important in connection with gallduct infection, particularly when the fever comes on intermittently. If an infection be in the gallbladder only, even with pus, one usually notes fever but rarely a chill. Fever does not necessarily mean gallduct trouble, but with

chills and fever one will usually find stones or an infection in the common duct. A very interesting thing has occurred in my practice from time to time in connection with the acute septic gallbladder. Even after the gallbladder is removed, the patient often has chills and fever. There may be a stone, but usually no stone is present.

I vividly remember a case occurring some years ago in the person of a prominent railroad man. No stone could be detected in the common duct at operation although there were many stones and some pus in the gallbladder. The gallbladder was completely removed. The common duct was not opened. Soon after the patient returned home, he began to have attacks of pain with a little fever, occasionally a slight chill. These attacks became increasingly severe. After two or three months, I persuaded him to have another operation, at which time we opened the common duct and found some flakey, purulent matter but no stone. A sound was passed down into the duodenum, a drainage tube was put into the hepatic duct and the area was then quarantined. After this, the patient entirely recovered and has been well ever since.

The patient under consideration today is a very active, strenuous man, 59 years of age, with a blood pressure of 194. He has every evidence of a severe septic condition in his galltracts. He is a very bad surgical risk, much worse than he would have been three months ago, when he came down with the attack. During these three months he has gone down from an active, upstanding man to a stooped, sick man. I know of no patient who offers more risk than a strenuous professional or business man between the ages of 55 and 60, especially when afflicted with a septic condition.

#### OBSERVATIONS DURING OPERATION

We now open the abdomen, cut down thru the scar and may call attention to the very few adhesions around this gallbladder, considering the fact that we had such an acute septic condition at the former operation. This is what occurs when a protected pack is used instead of a small drain or small tube. Last week, I called your attention to the extensive adhesions in a septic gallbladder case, in which only a small drain had been used elsewhere at previous operation. This difference practically always exists between the two kinds of drainage.

This gallbladder is distended. There are stones in it. They have formed since the former operation, for we know we left no stone in the gallbladder before. We now put in a temporary pack of gauze so that, if we open the gallbladder, we will not soil the field with its contents. We will not remove the gallbladder at this time, for I observe that the common duct is very much dilated. We will leave it untouched until we see what is in the common duct. It is larger than my middle finger. There may be no stone in it, but at least it is infected. I next take a hypodermic needle and insert into the duct and

get bile which is a little cloudy. The gallbladder is large and distended, and is in my way, so I will open it and remove the gallstones and pack the gallbladder temporarily with gauze. The reason that I do not remove it at this time is that I may find a condition of the common duct which makes it inadvisable to sacrifice the gallbladder. Sometimes, we need the gallbladder to be used for connecting the upper bile tract with the intestine. There is one good sized stone in the common duct. As far as I can determine, there is just one. Two traction loops are now placed in the walls of the duct. A longitudinal incision is made between the two loops. My finger is introduced into the duct. I find no stone above, where I found it before the duct was opened. I feel the bifurcation of the hepatic duct. The stone is evidently below.

A very striking thing connected with this case is that there has never been jaundice. With all this obstruction and all this infection, there is not the slightest tinge of jaundice. The cystic duct between the gallbladder and common duct is very narrow and small. I have every reason to believe that the stone was formed in the common duct and not passed from the gallbladder into the duct. In the first place, this stone is too large to have passed. In the second place, I have always felt that a common duct stone of this size, which has never produced jaundice, has usually formed in the duct, and that the duct has enlarged as the stone has formed. Therefore, the bile passes around it.

Now we will see if we can pass a probe into the duodenum. If so, we will make short work of it. It is passing into the duodenum. It goes down several inches into the duodenum. With my thumb and index finger, I follow the probe downward until I reach the ampulla of Vater. There is another stone in the ampulla of Vater. It is not impacted, for in passing the probe I have moved the stone in the ampulla and I am gradually pushing it back in the duct alongside the probe which acts as a guide. I think the presence of a probe or a catheter in the common duct is very important in searching for stones low down. Such an instrument acts as a guide and enables one to definitely locate the duct and determine the relative position of a stone or other obstruction. Note that I have the probe in for six inches or more, so I am certainly in the duodenum.

Now I find, after the stone is removed, that the probe passes very easily into the duodenum. This stone has not been impacted in the duct. I will, therefore, take out the gallbladder, which is definitely diseased. I pass the artery forceps underneath what appears to be the cystic duct. In dealing with a rather rotten gallbladder of this kind, one must be very careful that one does not leave a small piece of mucous membrane. Sometimes a stone lodged in the cystic duct will make sufficient pressure to produce gangrene of the mucosa. Sometimes in the case of an infected edematous gallbladder, it is pulled off at its neck and one assumes that one has it all.

Everything goes well for a while, but finally a stricture of the cystic duct takes place, where the stone had made the pressure. If one has left a small piece of mucous membrane external to this point, the mucous membrane will secrete mucus and create a cyst which gives a great deal of trouble and a great deal of pain or tends to keep up a very annoying fistula which opens and closes at intervals. One should, therefore, try to remove the cystic duct low

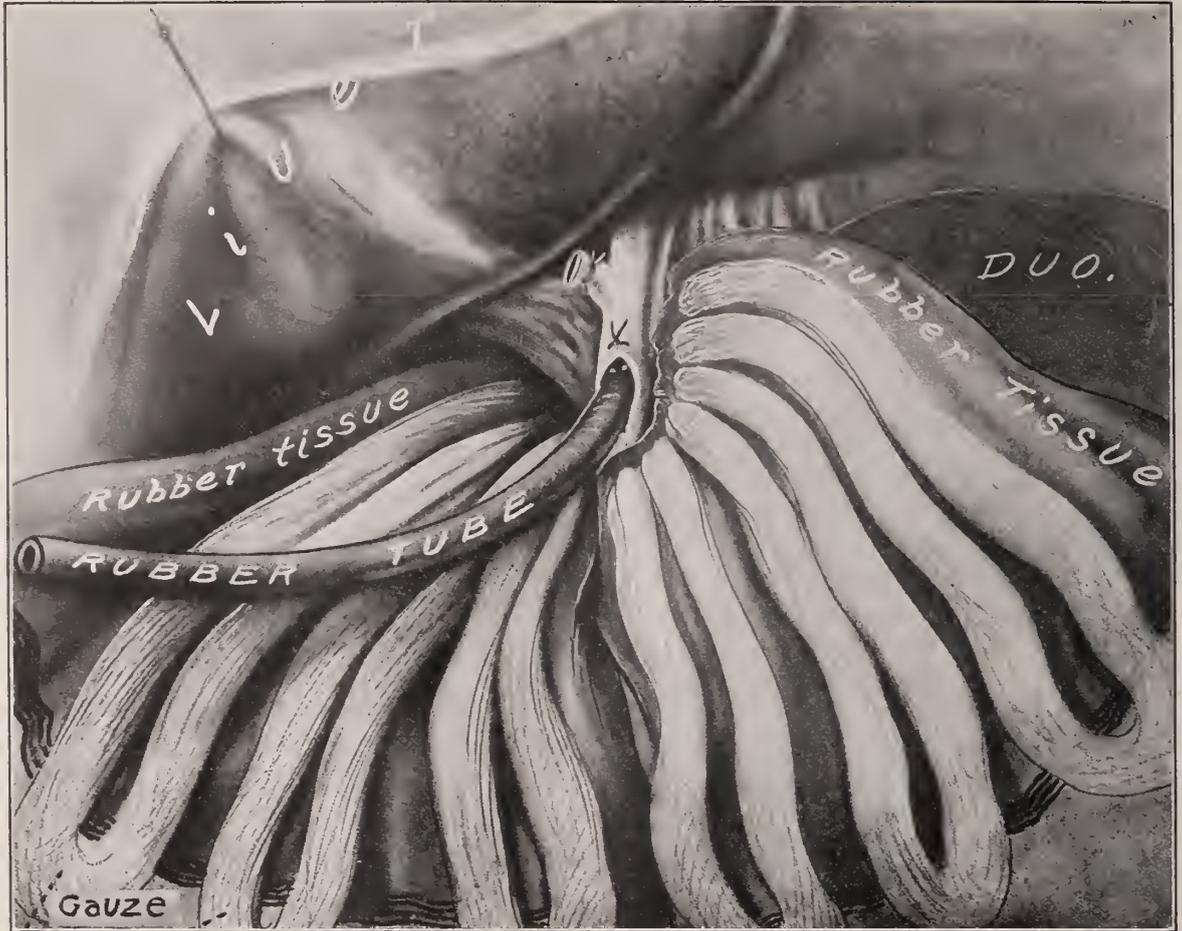


Fig. 10. After exposing the field, six small wick ends are placed below the common duct virtually in the foramen of Winslow. An equal number are placed above between the stomach and common duct, sur-

rounding the area. Now we will use a tube which we pass upward into the common hepatic duct (fig. 10). We will not close it very tightly, simply tack it in the opening and draw a quarantine around it (figs. 10, 11 and 12).

POSTOPERATIVE DISCUSSION

When one is called upon to treat a very seriously sick patient for septic involvement of the gallbladder and galltracts, it is often unwise to attempt to do any radical operation or even to give a general anesthetic at all. In such a case it is often wise to open the abdomen under local anesthesia, expose the gallbladder, carefully insinuate the hand beneath and around the gallbladder, place two sheets of rubber tissue, such as one uses in the quarantine pack, then carefully surround the gauze wicks which are placed between the rubber tissue and the gallbladder. The gallbladder is then stabbed, contents removed and a tube, piece of rubber tissue or piece of gauze is placed in the gallbladder for drainage (fig. 9). Such a procedure is quick and tides the patient over the immediate crisis. If necessary, the gallbladder

rounding the area. Two 4-ply rubber tissue sheets are made to surround the gauze. When drawn together a cigarette drain about an inch in diameter is made, including rubber tube, draining the duct in its center.

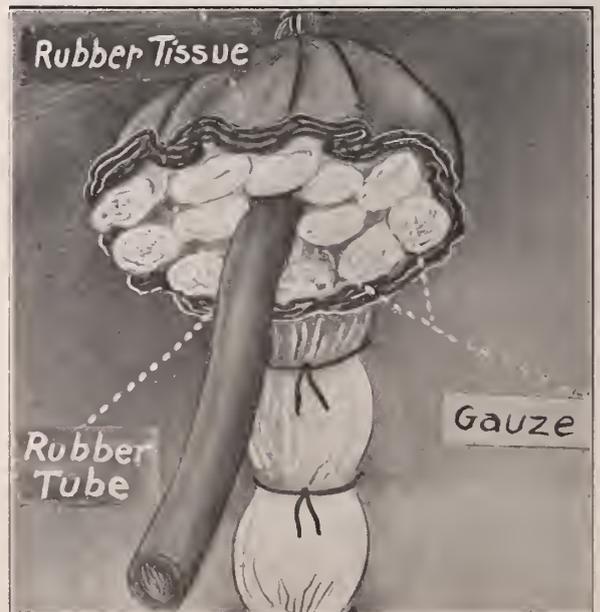


Fig. 11. Wound closed, quarantine pack coming through the wound, including rubber tube draining the common duct.

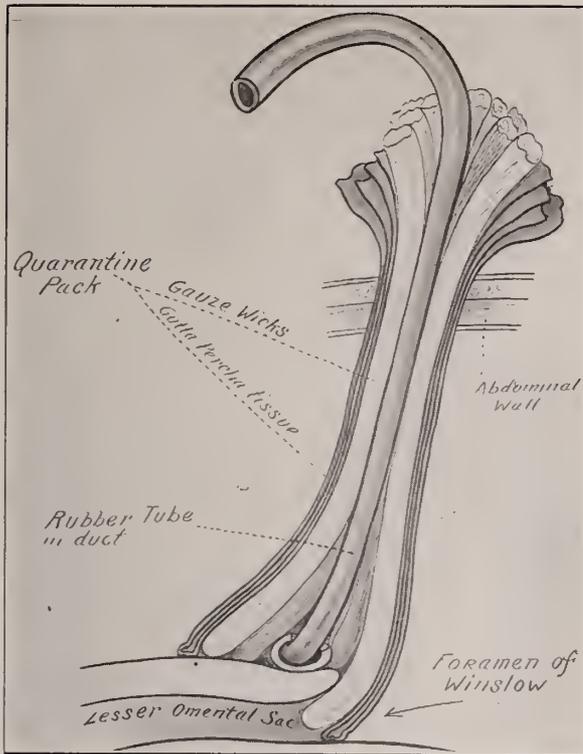


Fig. 12. Sectional view of the quarantine pack placed around drainage in common duct.

can be removed much more safely at a later date. Having used the quarantine pack at this first operation, the adhesions at the next operation will be of little consequence.

Nowadays we often hear the remark that the day of gauze drainage is passed. I think we might better say that the day of the old method of gauze drainage has passed. In discarding gauze in connection with abdominal surgery, we would discard one of our most valuable agents. We remember the scriptural quotation, "The stone that the builders rejected, the same has become the head of the corner." If we look back over the traditions of the laity and doctors of the olden days, we will find that most of their traditions had a grain of truth in them. Steel must not be condemned simply because it is used for weapons of warfare. It has many other uses.

No one would now think of packing the abdomen full of gauze in bulk unprotected for any other purpose than in emergency, such as controlling hemorrhage, and yet gauze properly handled and properly protected becomes in many instances the most valuable agent in abdominal surgery. This is particularly true when used for the purpose of quarantining a septic or denuded area from the free peritoneal cavity. In order to make it effectual,

however, it becomes necessary to separate the gauze itself from the peritoneal cavity with a smooth substance, like gutta percha tissue or rubber dam. In using gauze wicks in this way, it is very important to remember some fundamental observations which have been made concerning the behavior of the peritoneum in relation to foreign substances.

1. The drainage from an abdominal wound is for the most part not pus, but consists largely of serum which has been poured out from the blood.

2. The amount of serum exuded into the drain is in proportion to the amount of peritoneum in contact with the drain.

3. The amount of serum delivered to the surface is in proportion to the amount of drainage material coming through the opening in the abdominal wall.

4. Gauze coming through an abdominal wound very rapidly chokes unless it is surrounded by rubber tissue or some such material.

5. Gauze drainage removed on the second or third day breaks down the wall and defeats the purpose for which it was used by opening up the spaces for reinfection.

6. One wick of gauze dipped into a glass of water and hung over the edge drains all the water out in a given time by capillary action. Ten wicks hanging over the edge would drain all the water out just ten times as fast.

7. Gauze will not properly drain pus or blood from an abscess cavity or from a cup or basin.

8. A gauze pack properly placed in the abdomen will drain out thick pus, not in the form of thick pus but in the form of thin yellow fluid which is a solution of the pus in the serum.

9. Blood is delivered, not in the form of clotted blood, but in the form of a red liquid which is the solution of the clotted blood in its normal medium.

10. Drainage from the free peritoneal cavity ceases within six to twelve hours. Therefore, in placing a quarantine pack which is also to be used as a drain for the general peritoneal cavity, we must place enough gauze wicks to deliver all the septic material within a few hours.

11. There must be as much gauze coming through the abdominal opening as there is at any given point within the abdomen.

12. The wicks of gauze should be small so as to avoid making too much pull at any one point when they are removed, and should have all free edges and ends turned in. We have used about twelve wicks which, when brought together in the

form of a single drain surrounded by gutta percha, makes a cigarette drain about three-fourths to one inch in diameter.

13. These gauze wicks are placed at points around an irremovable source of sepsis, such as an open duct or viscus; an infected or gangrenous gallbladder, uterus or other organ or tissue which is not to be removed at the time; a soiled field with denudation of peritoneum, etc.

14. After these wicks have been arranged so that no infection can escape from this area except through capillary action of the gauze, the gauze is surrounded by two sheets of gutta percha tissue, folded to four thicknesses as a rule, about the width of a man's hand. By the use of this rubber tissue, all the gauze may be covered in so that it has no contact with any of the intraabdominal organs except the quarantined area. In other words, we have quarantined the infected area and made it practically extra-peritoneal. The fluid, which has been poured out as a medium for the transportation of nature's warriors to combat the enemy in the form of a foreign body or infection, carries not only the warriors but the infection toward the surface and at the same time delivers the excess of serum which has been brought to the field and thereby removes the material which forms adhesions and postoperative morbidity.

15. The gauze wicks are removed on the sixth postoperative day under gas.

16. The gutta percha is removed a week later without gas.

17. *Never reinsert an abdominal drain.*

Seeing a number of these cases at later operations for other troubles reveals the fact that adhesions following this form of pack are even less than where no drain has been used at all. The adhesions are not in any way to be compared in either strength or extent to those following the use of the ordinary small drain which does not completely drain. There is never found firm adhesion of the stomach to the gallbladder or the gallbladder area after the quarantine pack. Furthermore, we have found that in many instances there is no agency comparable to the use of this pack for the cure of extensive adhesions.

We know of no other way to completely cure and prevent the further formation of serious adhesions in certain pelvic conditions, noticeable particularly in certain individuals who have a great power of resistance and who have had many operations, first, for some real or imaginary pathology; second, for

adhesions; third, for more adhesions and, fourth, for still more adhesions and intestinal obstruction. In such cases as this, when the adhesions are once separated and a quarantine pack, such as shown in figs. 9, 10, 11 and 12, is placed between the pelvic organs and the intestines, adhesions will form no more and the abdomen becomes practically normal inside. This is also true in the neighborhood of the gallbladder.

It is my unfortunate lot to see many patients who have had many operations with many adhesions following. One of the most troublesome morbidities in connection with this type of surgery is the adhesion of the stomach to the gallbladder or the gallbladder area, where a small drain or no drain has been used. This picture, compared with the cases in which we have used the quarantine pack herein described, presents an almost unbelievable contrast, for in the latter case firm adhesions are practically unknown.

#### POSTOPERATIVE REPORT

The postoperative progress of the case above related is as follows: Patient was very weak and feeble after the operation. Three days after the removal of the gauze wicks and nine days after operation, he began to have slight bleeding. The bleeding gradually increased. Finally the rubber tissue in the wound was removed and the wound was packed with gauze, which partially checked the bleeding for a while, but the oozing kept up thru the gauze. In twenty-four hours the bleeding had been so much that a blood transfusion was performed. The blood immediately stopped after the first transfusion. Five days later the patient again began to bleed. Another transfusion was done and the bleeding again stopped. Then the bleeding again returned, but not so profuse.

Calcium chloride was used in as large doses as the patient could stand. He had become very feeble and was partially unconscious for almost fourteen days. During this time he had chills and fever from time to time. Finally the bleeding was permanently checked. Bile flowed freely all the time. The patient was exceedingly slow in recovering. He was not able to be up until the forty-ninth day, and was not able to do his work for more than six months. He finally made a good recovery and is now (eighteen months after the operation, entirely well.\*

We have called attention to the absence of jaundice in this case. This I have noticed in a number of previous cases. I have seen the common duct packed with stones for its entire length, the bile working around each stone and flowing into the intestine and no jaundice. This occurrence I am sure is evidence that the stones have formed in the

\* An interesting observation that might be mentioned here is that during the first two weeks of this particular December, I treated another case of perforation of the gallbladder and two cases of perforation of the duodenum, in every one of which a definite infection had recently existed in some other part of the body. In one of the ulcers, the patient had just recovered from an attack of quinsy, another had had an abscess at the root of a tooth which had perforated the gum, and the gallbladder case had had an abscess in some other part of the body.

duct; in fact I am certain that such large stones could not have formed elsewhere. A fact to which I wish to call special attention is that in the absence of jaundice this patient had a postoperative bleeding which was in every way the same as the bleeding which accompanies deep jaundice. The bleeding was stopped in just the same way that we stop bleeding in cases of deep jaundice.

Are we not justified in suspecting that there is some other element in these common duct stone cases aside from the jaundice which disorganizes the blood and produces hemorrhage? It would seem that it might be a septic element more than the mere element of normal bile. The more experience I have had with galltract infections, the more I am convinced that it is probably the rule to have an infection, involving the common duct and other parts of the bile tract in cases where the gallbladder is infected with an acute sepsis. It would almost seem as if one should, in many cases of acute septic gallbladder (provided that the patient is in fairly good condition), put a drain in the common duct as well. I am inclined to think that this would be good practice and would probably save a good many secondary operations.

In conclusion, it may be said that *infection of the galltract is a serious matter and simple removal of the stones or the gallbladder or even drainage of the common duct very often fails to make perfectly healthy individuals of these patients.*

(To be concluded)

### CHOLECYSTECTOMY\*

CLINICAL AND PATHOLOGIC FINDINGS IN 200 CASES

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The following is a discussion of the clinical symptomatology and pathologic findings in two hundred cases of cholecystectomy done at St. Vincent's Hospital, during the two years prior to January 1, 1925. This group represents the patients of twenty-four different doctors. The cases were not selected but were studied in routine order as the specimens removed were sent to the laboratory. Effort has been made to make such a survey without prejudice, and absolutely without apprehension of any conclusions except those manifested in the data collected.

The ages of the patients varied from nineteen to seventy-one years. The average age was forty-one years. Seventy-two per cent of the patients were women. Patients came from all walks of life. No predominance seemed to come from any one particular vocation. The average number of days spent in the hospital was eighteen per patient. However, some of the patients were sent to convalescent hospitals upon discharge. The shortest time was twelve days and the longest time was fifty-four days for those leaving the hospital in a satisfactory condition.

Twenty of the patients or ten per cent died from the operation or from a complication following it. The shortest period between operation and death was three days and was due to hemorrhage into the peritoneal cavity. The longest period recorded was forty-five days and was due to common duct obstruction, nonmalignant.

#### Causes of Death

Pneumonia .....	4
Perforated duodenal ulcer .....	3
Embolism .....	3
Hemorrhage .....	2
Acute pancreatitis .....	2
Obstruction of the common duct .....	2
Chronic nephritis with uremia .....	2
Cause of death not recorded .....	2
<hr/>	
Total .....	20

#### CLINICAL SYMPTOMS

The duration of symptoms varied from a few days to thirty-eight years. The average duration of symptoms recorded were five and three-quarters years. The average duration of symptoms of patients with gallstones was eight years. One patient with cancer, age fifty-seven years, had symptoms for only four and one half months. The other patient with cancer, age forty years, had symptoms more than ten years.

#### Symptoms

Pain in right upper quadrant.....	89 per cent
Nausea or vomiting or both.....	48 per cent
Indigestion with flatulence.....	37 per cent
Pain referred to right shoulder.....	35 per cent
Jaundice .....	14 per cent
Constipation .....	13 per cent
Loss of weight.....	11 per cent
Chills or fever or both.....	7 per cent

The appendix was removed in addition to the gallbladder in forty-eight cases or twenty-four per cent. In three cases an acute appendicitis was found. The remaining forty-five cases showed a low grade chronic appendicitis or a normal appendix. A few cases complained of symptoms referred to the appendix, or frequent urination, etc., but which apparently had no real connection with the gallbladder condition.

\* From the Pathologic Laboratory, St. Vincent's Hospital. Read at St. Vincent's Hospital Staff Meeting, Feb., 1925.

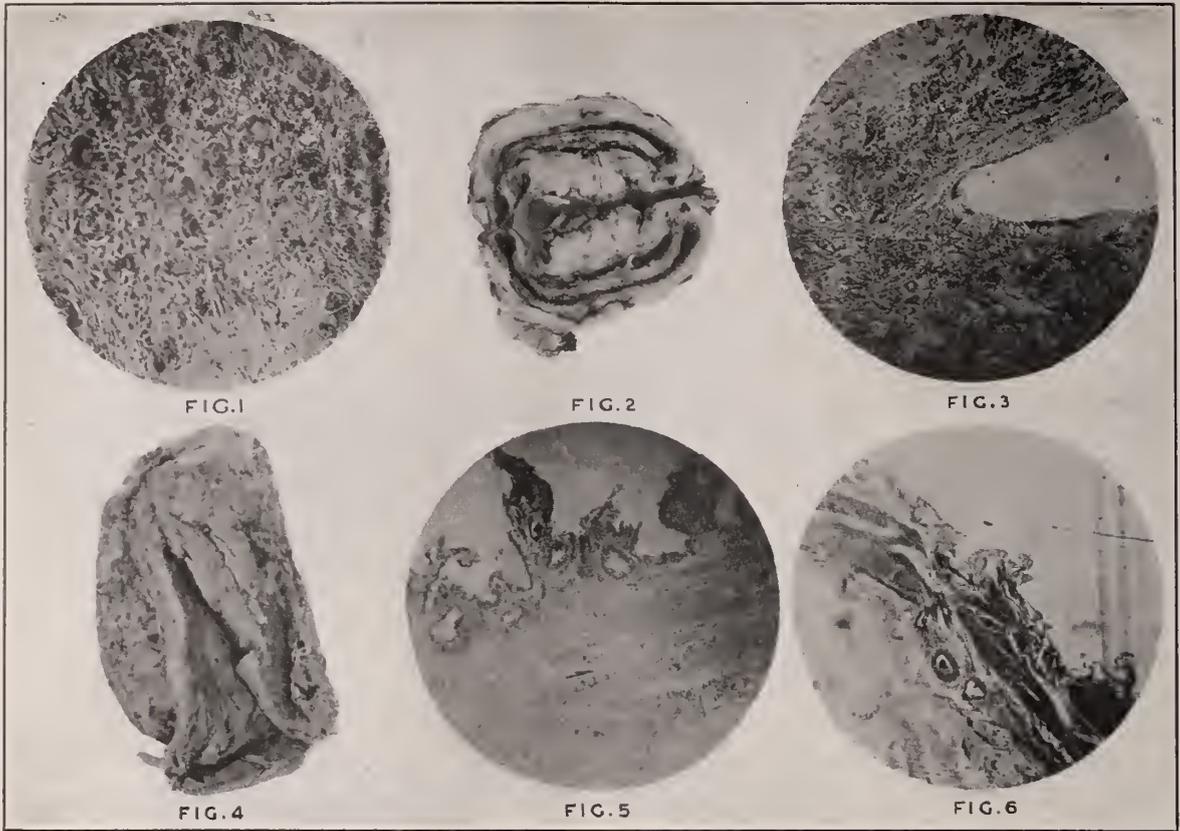


Fig. 1. High power of the carcinoma of patient, aged 57. Note the numerous gland-like formations characteristic of adenocarcinoma.  
 Fig. 2. A photograph of gallbladder, showing appearance of the carcinoma in the wall. Patient aged 49.  
 Fig. 3. Low power section of cancer. Patient aged 49. Note the diffuse infiltration throughout with carcinoma growth.

Fig. 4. Gallbladder everted, showing plastic exudate over the surface of the mucosa. Note the thickness of the wall.  
 Fig. 5. Shows the thickness of the gallbladder wall and the villous character of the mucosa. Note the round cell induration in the submucosa and wall.  
 Fig. 6. Shows mucosa denuded and thickened fibrous wall. Characteristic pictures of gallbladder when stones are present.

**Laboratory Findings**

White cells.....	20,000 to 30,000.....	6 per cent
White cells.....	15,000 to 20,000.....	11 per cent
White cells.....	10,000 to 15,000.....	26 per cent
White cells.....	under 10,000.....	57 per cent
Urine Albumin .....		20 per cent
Urine casts .....		4 per cent

**X-ray Findings: 16 Cases**

Positive .....	10 cases
Negative .....	6 cases

**Bacteriologic Findings**

Cultures from gallbladder wall and bile.....	67 cases
Positive .....	27 cases
Negative .....	40 cases
Colon bacillus .....	12 cases
Staphylococcus .....	6 cases
Streptococcus .....	5 cases
Proteus .....	2 cases
Colon and streptococcus .....	2 cases

Approximately forty per cent of those cultured were found positive. This is a very high percentage but is due to the selection of more pathologic gallbladders for culture and not making routine cultures of each. In regard to culturing the wall of the gallbladder, it is almost necessary to culture the bile at the same time. If there is an obstruction of the cystic duct, the gallbladder content will be

largely from the mucous glands of the gallbladder mucosa.

**PATHOLOGIC FINDINGS**

Of the two hundred cases sixty-eight had gallstones; thirty-six had acute cholecystitis. Two cases had carcinoma; one case having carcinoma was fifty-seven years old, the other was forty-nine. Both were females. Carcinoma in both cases was adeno in type, evidently arising from the mucosa or submucosa (see figs. 1, 2 and 3). A diffuse infiltration of the wall had taken place in both cases. Stones were present in the lumen of the gallbladder in both cases. Both had severe pains in right upper quadrant, radiating to the shoulder. The patient aged fifty-seven was jaundiced and died of hemorrhage on the eighth day following the operation. The other left the hospital in a satisfactory condition and no further report was obtained.

Of the acute cholecystitis cases, the gallbladder was enlarged in eight and small and contracted in two. The usual microscopic picture was present,



Fig. 7. Hypertrophy of the gallbladder. Gallbladder measures seven inches in length. Small stone lodged in cystic duct, causing obstruction.

Carcinoma .....	1 per cent
Acute cholecystitis .....	18 per cent
Chronic cholecystitis .....	81 per cent
Cholelithiasis .....	34 per cent
Acute cholecystitis with cholelithiasis.....	11 per cent
Stones in common duct.....	12 per cent

i.e., polymorphonuclear cell induration, diapedesis and hemorrhage, and in some cases ulceration and denuding of the mucosa, as in eight of the gallbladders covered with plastic exudate which were becoming gangrenous, as in fig. 4.

The size of the gallbladder was carefully noted in all cases. The average normal gallbladder measures about three inches in length when moderately distended. It was found that twenty-six per cent of the gallbladders removed were definitely enlarged and that twelve per cent were smaller than normal size. The microscopic sections of each of these bladders, whether enlarged or contracted, showed marked microscopic changes, indicating an inflammatory process present.

In studying the group classed as chronic cholecystitis, the problem is somewhat the same as in chronic appendicitis. There are normally a few lymphocytes in the mucosa and submucosa. The gallbladder may show no apparent pathologic change other than collections of round cells in the streptococcus or colon bacillus. Where the chronic inflammatory process is marked, the mucosa often becomes villous and many small round cells will be found throughout the walls, as in fig. 5. In practically all cases with gallstones the mucosa was denuded in places and in other places villous in character, as in fig. 6.

## ACUTE OSTEOMYELITIS AND ITS RELATION TO THE GENERAL PRACTITIONER\*

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The high mortality and protracted morbidity of acute osteomyelitis, with the frequent serious impairment of function resulting from this disease, force us to the conclusion that there is still much room for advancement in our methods of handling these cases. The opinions of numerous authors, expressed in the literature of the last five years even, are so markedly at variance that one is led to the belief that the problems involved in acute osteomyelitis have not all been solved.

In discussing the question of osteomyelitis it is not with the thought that I can bring anything new to your attention, but rather to emphasize certain points which I believe will be brought out by a brief reference to personal cases. In reviewing the twenty-six cases which have been under observation and treatment, I find that they fall into two definite groups: (1) the acute and (2) the subacute and chronic cases.

As it is with the acute cases that we are more concerned, I will merely summarize the second group, the subacute and chronic cases, for the purpose of contrast with the acute cases. In this group, eighteen in number, naturally come the long standing cases of osteomyelitis with sinuses, sequestra or both, and the cases of localized pus processes in bones which have been the seat of an acute osteomyelitis sometime previously. Also included in this group are cases of small, definitely localized foci of suppuration, generally situated near the extremity of a long bone, and known as Brodie's abscesses. Three of these occurred many years after a previous acute osteomyelitis. All were in adults.

In this group the symptoms are relatively mild, pain being the predominant symptom, and there is localized tenderness. The temperature rise is generally slight. Some of these cases had persisted for weeks or months with but slight changes. X-rays here reveal, generally, a clear-cut picture of localized bone destruction, with more dense bone surrounding, and evidences of a previous extensive osteomyelitis. In these cases there is little tendency to extension and involvement of surrounding bone.

In group one, the acute cases, we find a strikingly different picture. There were eight of these rapidly

\*Read before the Thirty-fifth Annual Meeting of Washington State Medical Association, Everett, Wash., Aug. 12-14, 1924.

developing, destructive cases. They occurred in children with one exception. The pain was very severe, the constitutional symptoms marked. In three the tibia was involved. The patients were decidedly septic, and when they came to operation six to twelve days after onset, the pus had spread through the greater part of the shaft. Massive bone necrosis followed. In one case the ramus of the ischium was the seat of the disease, in one the astragalus, and in one the femoral neck. The femoral shaft was involved in two cases.

The diagnosis in one of the tibial cases hung for seven days between acute articular rheumatism and typhoid. In the case of the astragalus the diagnosis was inflammatory rheumatism. The diagnosis in the case involving the femoral neck was again inflammatory rheumatism. After seven weeks treatment for this condition the family decided that a change of treatment was indicated. The patient had suffered severely from sepsis, and irreparable injury had been done to the hip joint.

The two cases in which the femoral shaft was involved were treated for four and six weeks respectively for typhoid. When finally sent to the hospital for drainage, they were extremely emaciated, with the involved thighs resembling swollen bags of pus, confined under the fascia. Both died of general sepsis. This gives us a death rate of 25 per cent. The percentage in which diagnosis was not made for four weeks or longer is  $62\frac{1}{2}$  per cent. In only one out of the eight cases was diagnosis made before the seventh day.

This brief summary of these acute cases certainly impressed us with the fact that acute osteomyelitis is a very serious condition, and that our average in diagnosis is mighty low. We experience a strong desire to turn over the page and begin a new series.

Here let us consider briefly the nature of the osteomyelitic process and its progress in these acute cases. The pus-producing bacteria, generally the staphylococcus aureus, are carried in the blood stream from a furuncle or other apparently innocent primary focus, and gain access to the bone or bone marrow. The long bones are more frequently involved. The process starts, as a rule, near the end of the shaft in the epiphysis. The process remains local for a brief time, possibly one or two days; but, as the pus formation goes on, the suppuration extends directly to the medulla, or by way of Haversian or vascular canals, to the subperiosteal space.

Starr's observations have led him to believe that the more frequent route of extension is to the sub-

periosteal area overlying the primary focus, a subperiosteal abscess resulting. From this position, by extension backward through Haversian canals, the pus penetrates the cortical bone of the shaft and the medulla becomes involved secondarily. A careful reading of Starr's paper indicates that the autopsy specimens studied were from cases which died of an acute hemolytic streptococcus infection. Two of our three cases of acute osteomyelitis of the tibia, operated on after seven days duration, showed extensive involvement of the medulla, with only very small subperiosteal collections of pus, and these were situated over the involved shaft, not over the region of the epiphysis. This would indicate early, direct extension to the medulla, rather than secondary extension from a subperiosteal abscess.

These were cases of staphylococcus infection. It is probable that the route of extension followed in the streptococcus cases is quite different from that in the staphylococcus cases. But, whether we accept Starr's view of the pathology or adhere to the older belief of direct extension to the medulla in the staphylococcus cases, certain it is that unless drainage is afforded in the early stages, there is grave danger of medullary involvement, as well as subperiosteal abscess formation. The pus is retained under pressure in a resisting cylinder, the blood supply is cut off and extensive necrosis of the medulla occurs. With its medulla destroyed and partly stripped of its periosteum, the shaft is doomed to partial or total necrosis. Disability extending over months or years results.

Direct extension to proximal joints, and metastatic involvement of other joints with resulting limitation of motion occurred in three of our cases. Death from profound sepsis occurred in two. The period of severe morbidity in those that recovered was from six to eighteen months. Repeated operations for the removal of sequestra are the rule, and localized foci of necrosis recurring years after the primary siege are common. Failure to make early diagnosis is responsible for most of these disastrous results.

There is probably no septic process, in which the consequences of delay are so serious as in acute osteomyelitis. Within the peritoneal cavity the extension of acute infection is limited by a very potent defensive mechanism. A large percentage of the acute appendicitis cases, in which operation has been delayed, result in the formation of a local abscess. In acute osteomyelitis, unfortunately, this is not the case. Infection in the medullary space is, to use the expression of Crile, infection in a "defense-

less area." Here there is no walling off process, the efficient defensive mechanism of the peritoneum is wanting. The dangers of septic absorption and metastatic infection are imminent. Preservation of life and function of limb depend on early recognition and early surgical intervention.

#### DIAGNOSIS

How can we explain the fact that, as a rule, the diagnosis of acute osteomyelitis is not made until the disease has progressed for days or weeks? Warbasse<sup>2</sup> states that in a surgical practice of twenty-five years he has rarely known a general practitioner to recognize acute osteomyelitis in its first stage. Other surgeons have had a similar experience. Is it not possible that this is because we do not keep the clinical picture clearly and constantly in mind? Acute osteomyelitis is, compared to other surgical emergencies, very infrequent. We see acute perforating gastric and duodenal ulcers more frequently than acute osteomyelitis. Acute suppurative appendicitis is from fifty to one hundred times as frequent as acute osteomyelitis. The physicians in Chelan County, with whose work I am familiar, have not averaged more than one case of acute osteomyelitis each in seven years.

Failure to make a careful physical examination is also responsible for many delayed diagnoses. If this disease is kept in mind, the diagnosis is generally easy. It commonly occurs in children; boys are more often attacked. Pain, tenderness to deep pressure over bone, and fever are the triad which form the picture. The pain is severe and constant. In the case of long bones which are commonly involved, it is located near the end of the shaft. It may be somewhat diffuse or localized about the joint. The tenderness, however, is definitely localized, and a careful, systematic examination will reveal a point or small area, usually near the end of the shaft, where deep, sustained pressure on the bone brings out severe complaint from the patient. Motion of the joint, while the part of the extremity above is carefully supported, does not generally produce pain. This rules out acute inflammatory rheumatism or arthritis.

A few days later, when the process has extended, the diagnosis presents more difficulty. There is marked swelling and edema of the surrounding soft parts and extending to and about the neighboring joint. The skin may be reddened, and there may be red lines of lymphangitis. There will then be tenderness about the joint and motion will produce pain. The condition then may be mistaken for an

acute arthritis. This can be ruled out, however, by keeping in mind the fact that with an acute joint infection there will be a marked distension of the synovial cavity with fluid. Even though there may be marked signs of inflammation in the tissue surrounding the joint, we will find in osteomyelitis, that one most important sign, acute tenderness to deep pressure over the extremity or shaft of the bone involved. This would not be present in a primary arthritis.

The x-ray affords absolutely no help in the early diagnosis of the acute cases.

Pain in the proximity of a joint or bone, with acute tenderness to deep, sustained pressure over the bone, accompanied by signs of sepsis, demand surgical intervention just as surely as do pain, vomiting, tenderness and muscle rigidity in abdominal conditions. When the profession recognizes this more generally, many of the disastrous results such as we have encountered will be prevented.

#### TREATMENT

Early recognition and immediate drainage of the focus are the all-important points in treatment. If extensive necrosis is to be avoided in these severe cases, the operation must be done within twenty-four or forty-eight hours of the onset of the pain.

There is a marked difference of opinion among surgeons as to the operative procedure indicated in acute osteomyelitis.<sup>3</sup> Starr<sup>1</sup> has advocated simple incision of the periosteum in the early cases, not drilling into the epiphysis when pus is found beneath the periosteum. Some surgeons have adopted this method and are applying it in the later as well as the early cases.

In operating upon cases of six to eight days duration, we have repeatedly seen the pus well up through the trephine opening, indicating that the pus in the medullary canal was under considerable pressure. Incision of the periosteum only under these conditions certainly does not afford free drainage.

A personal communication from Professor Starr in regard to this method states: "It is only the comparatively early cases, with frank pus underneath the periosteum, that we think are safe left with periosteum incision only. When there is no frank abscess, we make a window in the cortex or make two or three drill holes pointing towards the epiphyseal line. The group of cases which we feel we may treat by simple incision of the periosteum are for the most part streptococcal in origin and usually of the hemolytic type."

Most of the severe cases in which suppuration

involved the medullary canal have in my experience proved on culture to be staphylococcic in origin. Murphy<sup>4</sup> pointed out long ago that the streptococcus was prone to produce a subperiosteal abscess, while the staphylococcus was commonly found to be the organism present in suppurations involving the medullary canal. It seems a reasonable conclusion that the type of operation and extent of drainage should be based on both these factors, i.e., the duration or progress of the disease and the type of infecting organism.

I am convinced by experience that in the severe cases involving a large bone, as the tibia, where the process has extended over several days or a week's time, when severe symptoms of toxemia are present, and there is acute tenderness along the shaft a little distance from the epiphysis, very free opening by removal of a strip of cortex overlying the involved medullary canal is necessary to check the extension of the suppuration, and relieve the acute symptoms. Removal of this lid with the motor saw consumes less time, and causes less shock than the use of chisel and mallet. The primary seat in the epiphysis must be freely drained as well.

These patients are in a serious condition, and careful judgment is necessary to avoid doing too much. No effort is made at this time to remove necrotic bone, the sole object being to secure ample drainage. A perforated rubber tube is placed in the gutter and the cavity kept bathed in Dakin's solution. Exposure in the sunshine, out of doors has had a remarkably beneficial effect on the healing of the wound.

In the exceptional late case, neglected for weeks, with large areas of pus confined under the fascia, one must be content with simple drainage of the pus pockets, in an effort to tide the patient over. Certainly the medullary canal should not be opened here. Nature has already accomplished this by necrosis of bone and sloughing periosteum, though at a terrible cost to the patient.

In one very severe case with protracted sepsis and metastatic infection of the knee of the other leg, life was despaired of. Directly following repeated blood transfusions there was striking and continued improvement.

After the acute stage has passed and the extent of the bone necrosis is clearly outlined, the removal of sequestra is done. This should not be undertaken until sufficient regeneration of cortical bone has occurred to give a firm support and maintain the length of the bone. Total subperiosteal resection of the shaft, done early, has sacrificed too much

valuable bone, and there have been too many cases in which the bone failed to regenerate to justify this method.

#### CONCLUSIONS

Acute osteomyelitis has proven to be a very serious infection.

Early diagnosis and immediate institution of surgical treatment will do much to improve our results.

One method of treatment cannot be applied to all types or stages of the disease.

The proponents of the methods of drainage by incision through the periosteum only advocate it for cases in the very early stage of the disease. In the majority of cases so treated by Starr, the infecting organism was the hemolytic streptococcus.

When there are definite signs of involvement of the medullary canal, incision of the periosteum does not afford free drainage; an opening should be made through the bone cortex.

Finally, I would urge the man doing a general practice, whose privilege it is to first see these patients, to be always on guard when summoned to a patient with pain in the proximity of a joint, keeping ever in mind the picture of acute osteomyelitis. To him will all credit be due, when by his alertness in recognizing and treating acute osteomyelitis as a surgical emergency, the bad results shall have become less frequent.

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**The Habit of Attending Medical Meetings.** Presence at a meeting, hearing discussions and papers not only is of value to the beginner, but has been considered of importance to our masters, says Marcus Feingold, New Orleans (*Journal A. M. A.*, July 11, 1925). Naturally, not all that is transacted in every meeting is of the kind that signifies progress and betterment; some things presented may be of the kind that should be avoided and deprecated. But there is good also in listening to this kind because it teaches how to avoid the mistakes of others. Presence at meetings produces, in different members of the audience, various emotions. These emotions must apparently fall into one or more of the following subdivisions: admiration for the subject or the speaker; feeling of one's own inferiority in having done so little; the desire to imitate that piece of work and that method; the determination not to overlook this or that in the future, and regrets at having failed to observe this and that. Attendance at meetings has often led to ties of the most fruitful and warmest friendships among medical men the world over. History of medicine contains many records of the wonderful effects of exchange of thoughts among friendly spirits, just as these medical meetings.

## BARNACLES\*

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"My soul is sailing through the sea,  
But the past is heavy, and hindereth me.  
The past hath crusted, cumbrous shells,  
That hold the flesh of cold sea-mells  
About my soul.  
The high waves dash, the high waves roll,  
Each barnacle clingeth and worketh dole,  
And hindereth me from sailing."

—Sidney Lanier.

The learned professions, law, divinity and medicine (not to mention teaching) are covered with barnacles. They are burdened with tradition, precedent and superstition. Their progress is retarded and the weight of their incrustations is so heavy that they are in danger of sinking.

Our law courts are administering justice in a manner quite unsatisfactory to the people who support them. Decisions are made by our judges, not on the evidence available, but from evidence admissible in court, according to some ancient precedent—the decision of some previous judge who perhaps lived a hundred years ago. Common sense is eliminated in the introduction of evidence. Our criminals go free. Respect for law has almost disappeared and we stand by helpless, while a wave of crime sweeps over the land. The past rules the present, and hinders our progress.

Theology (I do not mean religion), as taught and preached by our ministers and priests, is like a dead weight about the neck of science and progress. If a great soul breaks away, he is tried for heresy. Superstition prevails over fact. The fundamentalist is abroad in the land. So well proven a fact as evolution is not recognized but even ridiculed. Three of our state legislatures have passed laws making it illegal to teach evolution, as proved by the well known facts of biology. Teachers in high schools have been discharged for explaining the plainest facts of biology and its inevitable deductions—the processes of evolution. These trained scholars have had to turn to manual labor for their daily bread. Bryan has joined the throng to orate on a subject of which he is quite as ignorant as he was of national finance in 1896. It is contended that evolution is not mentioned in the Bible and, therefore, not true.

They may suppress our modern Galileos but that does not prove the world is not round. "Truth crushed to earth will rise again," but it must first get rid of the barnacles. No people is free, no person is free until he can think for himself, dream for himself, believe what truth he may discover and apply it in his own sweet way.

Just to earn a livelihood and amass wealth is not enough. "Man does not live by bread alone." As Wiggam has pointed out, four-fifths of life are not in the realm of science. They are probably the best four-fifths. "They lie in the field of beauty, art, imagination, dreams, ideals." He also shows that ideals of physical beauty can through marriage selection change the faces of men. Every high period of human splendor has been characterized by beautiful, intelligent and noble men and women. Our Puritan ancestors did not look as we do. The faces of our upper classes have become much more refined and tend much more toward the Greek type than did those of our forefathers. A case where "evolution was caught on the wing." Ideas of beauty and inner excellence not only change the faces of men by the process of mate selection, but by the same process "moral beauty changes the hearts and minds of men."

No untruth can give us right ideals. Sentiment cannot take the place of fact. "Men of intelligence blush and ignorant men are misled," when preachers try to make men good by chemistry, biology and psychology that belong to "the mythical twilight of the gods." Next to law, theology is the most encumbered with barnacles. But though we deplore the condition of law and theology encrusted as they are with precedents, error and superstitions of the past, it is not for us as medical men to boast so long as we have not cleaned our own hulls. Let us pluck out the beams from our own eyes.

Medicine has, perhaps, been delayed in its progress more than we think, by the superstitions, the taboo, the traditions, the ethics especially, and the authorities of times long past. It does not follow that we should believe a thing because our fathers believed it. Think of the ages of superstitious reverence, in which the older writers were held to be infallible! Not until the very recent development of the sciences of bacteriology, pathology and especially biology, have we begun to shed the terrible incubus of reverence for authority.

Nearly all progress in medicine has been produced by those who have been courageous enough

\* Read before Central Willamette Medical Society, Eugene, Ore., March 25, 1925.

to hold fast to that which is good and to throw the past overboard. Many of us older men can still remember when medicine was just emerging from the legalized murders of phlebotomy, eclectic medicine, mesmerism and other messy and now musty curiosities. But look you! Why do we tolerate even worse and more dangerous forms of quackery in our society now, such as osteopathy, chiropractic, scienceless christian science and Abram's electronic reactions?

It is, indeed, true that the practice of medicine should not be all science. It should like life itself be only one-fifth science and four-fifths art. The medical man must not only be a judge of truth and error but he must be a teacher of the truth. The world is his school, a world full of pupils eager for the truth about medicine and surgery, if he will but take them into his confidence. By truth I mean its modern conception, as defined by our modern philosophers as practical and verifiable experience, not that vague notion of an ideal floating about in the clouds, simply "experimental intelligence" which tears man out of his resting place on "eternal truth," complacently waiting to be carried to the skies on flowery beds of ease, and "casts him naked into an open world, where truth is not handed to him gratis but where truth is something to be achieved, in fact, of mental daring and fearless experimentation with the universe and with his own life, and the practical stuff of which life is made—a solution and amending of social evils." Truth is known only by the success of achievement.

Until very recently the ethics of our profession has caused us to stand on our dignity, a dignity wholly assumed. The laity could take us or leave us as they wished. They left us and went elsewhere to learn of the aforementioned osteopathy and christian science. What an incubus this attitude of the medical profession has been! They asked for bread and we gave them a stone. We have treated our patients as though they were "incurious animals."

Very recently this attitude has begun to change. Medical writers print daily letters in our newspapers, teaching the common people the common facts about their diseases. Only a few weeks ago there happened in Portland one of the most astounding demonstrations of the liaison of the laity and the medical profession, which heretofore has been unknown in history. There were a few eminent thinkers and workers in medicine visiting and directing the regional meeting of the American Surgeons

Association, and a public meeting was held in our auditorium to tell the people some facts about medicine, its progress and what it has in recent years accomplished. More than six thousand people came to learn and thousands more were turned away for lack of room. The people are eager for medical knowledge. The medical man must be not only a teacher, but a teacher of truth only. He must not suppose that his patients are too ignorant to understand him.

Such outworn, fictitious statements as "your blood is out of order," "that eruption is due to nervousness," or "you have a sluggish liver," I say such mysterious prevarications employed to cover one's ignorance are fatal to a frank, sane and sensible understanding between the physician and his patient. If a doctor doesn't know, he should say so. We must secure the cooperation of the people. Knopf once said that, if the medical men of this country could have the active support of all the intelligent people, tuberculosis could be stamped out in ten years.

Of course we shall all die, but none of us wants to die prematurely and especially from tuberculosis. Boswell once said in effect: "No one wants to live only the first half of his life and miss all of the second half; he would never know which was the better." Or, as Browning puts it still better, "Grow old along with me; the best is yet to be; the last of life for which the first was made."

Who does not admire a serene old age? Who does not seek to attain that delectable state? If life is four-fifths art and ideals and beauty, and one dies at forty instead of eighty, how much he has missed of all that makes it worth while! I often wonder if youth can ever appreciate the wealth of real enjoyment in life—that love of nature and appreciation of beauty and harmony all about us which becomes manifest only after the experiences of early life have passed, and maturity of judgment and love of nature have taken the place of too much conscious effort to become happy.

To healing the sick and relieving suffering must be added the prolongation of life to a healthful, beautiful and tranquil old age which may finally fade away as one "lies down to pleasant dreams." How can this greatest of professions secure these desirable results? Surely not by looking backward, not by following blindly the past with its errors, not by believing anything and everything because forsooth it is printed in a book or because some "authority" has said it, but rather by research, by testing all things, by holding fast only that which

is good, only that which science teaches is the truth, by relying on the work of today for the progress of tomorrow, with a vision of that time when man shall live and work and be happy not only fifty but for eighty years.

Only yesterday our medical confreres returning from London were bursting with enthusiasm about opsonins, gastric and visceral ptosis, the Lane and other kinks, and now these nearly forgotten discoveries are replaced by equally enthusiastic exploitation of the hormones. Endocrinology is being exploited for all it is worth and it must be worth a lot to some quack institutions, if we can judge by the amount of advertising they send us.

The gullibility of the medical man is truly pathetic. It comes from that same inherent superstition that led our forefathers to believe in witchcraft, and still causes some to believe in spirits and rappings and the occult, all of which when scientifically examined have been proven to be pure fakes. It must be apparent to every thoughtful physician that the medical profession never will take an unshakable and permanent stand on a scientific basis, until every vestige of superstition shall have been banished from medical practice.

From the awe in which the medicine man has been held by the superstitious, has arisen that almost criminal practice of making an examination, a diagnosis and writing a prescription in ten minutes. You know that cannot be done. The only excuse that can be made for it is that it is the patient's fault.

Could we but substitute common sense for theory, wise judgment of present facts for reverence of the past, replace our vain glorying and self-satisfied complacency with a vast and consuming desire for research and additional facts, we should not be obliged next year to admit that "all our pomp of yesterday is one with Ninevah and Tyre."

I love that vedic hymn translated from the Sanscrit:

THE SALUTATION OF THE DAWN

"Listen to the salutation of the dawn:  
Look well to this day for it is life—the very life of life.

In its brief course lie all the vanities and realities of your existence,

The bliss of growth, the glory of action, the splendor of beauty.

For yesterday is but a dream and tomorrow only a vision,

But today well lived will make every yesterday a dream of happiness,

And every tomorrow a vision of hope."

So put this old medical hull in dry dock, scrape off the incrustations of past generations, the barnacles which hinder progress, paint on a fresh coat of hope and set sail on a new voyage of discovery.

"Old past let go and drop in the sea,  
Till fathomless waters cover thee.  
For I am living but thou art dead.  
Thou holdest back, I strive ahead  
The day to find;  
Thy shells unbind, night comes behind,  
I needs must hurry with the wind  
And trim me best for sailing."

1000 Corbett Bldg.

**The Effects of Hepatic Extract on High Blood Pressure.** Ralph H. Major, Kansas City, Kan. (Journal A. M. A., July 25, 1925), has found that liver extracts are much more potent in reducing blood pressure, both in experimental hypertension and in hypertension in man, than the other organ extracts studied. After considerable experimentation with various methods of extraction, he has obtained an extract that has a marked depressor effect in arterial hypertension, contains a very small amount of protein, and possesses no toxicity in the doses employed. It is prepared from an alcoholic liver mash by a process of alcoholic fractionation, the active substance appearing as a precipitate when an alcoholic concentration of approximately 90 per cent is attained. This precipitate is dissolved in distilled water and may be further purified by treatment with absolute alcohol, ether and chloroform. In the concentration employed in this work it contains no recognizable amounts of cholin, histamin or peptone, and its pharmacologic action differs in most respects from that of these three substances. The dose that we have employed therapeutically usually has no marked depressor effect on the normal blood pressure of healthy persons. Major has treated forty-two patients with the liver extract. The extract has

been administered intravenously, intramuscularly and subcutaneously. The effect is more prompt after intravenous injection but is also obtained after intramuscular and subcutaneous injections. The immediate effects of this extract are striking. Within one hour after injection the blood pressure usually falls, the extent of the fall varying from 20 to 50 or even 75 mm. of mercury. This fall is gradual and as a rule unaccompanied by any symptoms, although occasionally patients who have had a very marked and rapid fall complain of slight dizziness. The duration of this fall varies with the patient. In some patients the fall persists only from two to three hours, while in many patients it apparently persists for twenty-four hours and sometimes for several days. Several patients, after receiving from eight to ten doses of the extract, have had a fall in blood pressure which persisted for one week or more. No toxic effects from the treatment appeared in any patient. The extract produces a very slight burning on injection, which is no more uncomfortable than any type of hypodermic medication. These observations indicate that such a preparation has an undoubted immediate effect on the high blood pressure in arterial hypertension and, when repeated treatments are employed, apparently produces a more lasting fall in blood pressure.

# NORTHWEST MEDICINE

The Journal of the State Medical Associations of  
Oregon, Washington, Idaho and Montana

Devoted to the interests of the Medical Profession of the  
Pacific Northwest

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## EDITORIAL

### WHEN A MAN FEELS HIMSELF SLIPPING

Dr. Lewellys Barker, during the recent meeting of the Pacific Northwest Medical Association, discussed the above subject in a semi-impromptu talk at the Portland University Club. His audience, composed largely of laymen with a liberal sprinkling of physicians, listened with close attention and was rewarded by, and liberally applauded, one of the most valuable, interesting and pleasing lessons of the entire meeting.

It is unfortunate that, because this was a hastily arranged side issue from the regular sessions, relatively few physicians heard the address. The appeal was principally to those of middle age and its distinguishing characteristics were simplicity, sanity and balance. The speaker asked no one to go to extremes in managing the lives of middle-aged men and women. He pointed out the harm that is being done by the overactive lives which many Americans lead. He advocated moderation in work and half humorously quoted someone else to the effect that after middle life men ought not to work over nine months a year, tempering this with his own suggestion that, whether or no one could manage his affairs so as to rest one-fourth of the time, it was advisable to have several vacations each year, preferably a long one in the summer, and shorter ones about Thanksgiving and Christmas, or other holiday seasons. As a daily program he advocated abundance of rest with moderate exercise, a reasonable amount of work, and great temperateness in such matters as diet, smoking and the use of alcohol. There may have been some present who did not agree with him on the use of alcohol and tobacco and who would have preferred him to have advised complete abstinence from these substances. But Dr. Barker was not preaching asceticism but moderation. He evidently possesses one of those natures, to which gloom, introspection, self-analysis and the practice of puritanic restraint are repugnant. In the matter of diet his advice was much like that in regard to the use of alcohol and tobacco, that is, he urged moderation, with gradual lessening of pro-

tein intake and increasing attention to the purely hygienic phases of life. Throughout the address the speaker showed keen understanding of the psychology not only of middle age but of all ages. In short, he gave to a hundred or more laymen advice, for which as individuals he would doubtless have assessed them several thousand dollars for which they would have had full value received.

With increasing years men find themselves more and more willing to yield a point, less likely to hurl themselves against immovable objects, less dominated by stubborn and unreasonable resistance to the inevitable order of things. With age come dietetic, physical, intellectual and even spiritual limitations, accompanied by tolerance, increasing willingness to bow to necessities, and cessation of the tendency to kick against the pricks. But even with advancing years most people are more easily led than driven, and that particular form of compulsion against established habits which is urged by extremists continues to be offensive. Men who will not listen to a doctrine which demands that they shall give up all the things they like but that are not good for them, will readily yield to one which demands moderation in such matters, and little by little will find themselves increasingly willing to cut out objectionable practices, until they come to complete submission to that which after all is in many cases unescapable. Education is infinitely better than legislation; calm reason and logic better than arbitrary command. There is growing interest in the hygiene of middle life and it is a good sign of intellectual evolution that men of vigor and prestige shall from time to time discuss such problems with laymen in wholesome, understandable, non-technical language.

### FUTILE ADVERTISING

One wonders if the multitudinous advertising letters and pamphlets which clutter the mails ever reward their senders. The average physician daily receives from five to twenty of these, including weekly, biweekly or monthly repeat letters and trades journals of drug manufacturers, instrument makers and insurance firms and, most annoying to one who expects his bank balance to appear in red the first of each month, a vast number of patronage soliciting circular letters from bond houses and other investment agencies. The writer estimates that the total amount of such printing that comes to his desk must cost not less than \$200 per year, exclusive of reprints sent by physicians which are often of interest and value and of which there is

no criticism. If, taking all physicians, the average is but one-third of this amount, the total cost of these contributions to the joys of medical practice cannot be, for the whole United States, less than ten millions of dollars per year, most of which is sheer waste. It is probable that 95 per cent of all such material goes into the waste basket unread, as soon as its character is determined.

Without criticizing the right of the senders to mail these appeals, the wisdom of the proceeding is questioned from the advertising standpoint, and comment is made on the annoyance of having to sort through a pile of this material every day. Of course, some of the senders must benefit from this sort of thing, otherwise the letters would not be sent. But it seems as if a better method of reaching physicians would be to advertise through medical and legitimate journals that reach him regularly, and in which he can get his information summarized and as a matter of personal selection, rather than having it forced upon him whether he wants it or not.

#### A PROFITABLE CONVENTION

The attendance at the Portland meeting of the Pacific Northwest Medical Association was indicative of the increasing annual interest in this great meeting of the Northwest. The registrants exceeded six hundred in number. While a large proportion of these naturally came from Oregon, there were good representations from the other states of this region. From Washington came one hundred thirty-two, with twenty-seven from Idaho, seventeen from Montana, fourteen from Canada, eleven from Utah, with representatives from numerous other states. Such an assembly of physicians from many sections affords an ideal opportunity for forming acquaintances from a wide area. This privilege is decidedly advantageous for our Northwestern states which have much in common and are to an extent isolated from the most populous sections of our land. We owe it to ourselves to form a united and concrete group of medical men and women. Such a purpose is fostered by this largest and most important medical meeting in this part of the country.

The foundation, however, on which this organization is based, is centered in the group of medical men who are secured from year to year to address the meeting. It was an exceptionally entertaining and able body of men who were secured for this gathering, representing modern leaders of our profession from various medical centers. While obvious-

ly it would be impossible to detail the characteristics and personalities of all the speakers, some of them were especially appealing, although each had his own outstanding individual attractions. Dr. Barker has the personal qualities and forceful characteristics which are essential to the ideal teacher. In listening to him one is often reminded of his former chief and associate, Dr. Osler. The philosophy of life and sane consideration of medical problems, which were universally recognized in the latter on frequent occasions, are impressively reproduced in the former. The vein of humor which runs through Dr. Barker's addresses helps to enliven his teaching and serves to qualify the didactic process of instruction which has come down to us from the traditional medical professor. Beside his formal addresses on scientific subjects, those who had the privilege of listening to his luncheon address at the University Club, will remember the bits of wisdom which he imparted in discussing "slipping," which is observed in most of us as the years go by. He would counteract this by participation in other interests outside the routine of medical life. He will always be a welcome guest among the profession of the Northwest.

The vein of Scotch humor which permeated all of the addresses of Dr. Stewart impelled everyone who heard him first to attend all the subsequent ones. While physiology is ordinarily considered a dry subject for the practitioner, Dr. Stewart's method of presenting his physiologic discussions and recital of experiments formed some of the most interesting and instructive features of the whole meeting. The fact that some of his views differed materially from the recognized and established principles of the past, provided an added interest in listening to his addresses. While most of the speakers hailed from our own land, England was represented by Dr. Drury, of London, whose lectures on the heart and circulation provided some of the latest information along this line of investigation. Although Sir Henry Gray came to us from Montreal, he presented the characteristics of the Scotchman who has not been long from his native land. It was interesting to get the viewpoints of our English cousins on medical and surgical topics. Although there may be variations in details, there is no difference between us in basic principles. The scholarly addresses of Dr. Herrick reminded some of the older members of his visit to the tristate meeting in 1909, when the union of the state associations was inaugurated. It is a span of years

since that date, yet Dr. Herrick cannot prove it either by change in personal appearance nor any lapse of interest in his substance matter nor the manner of its presentation.

The success of this meeting was enhanced by the cordial reception extended by the Portland profession. It is always a pleasure to meet in this city and the past reputation of its medical men for hospitality and cordiality was sustained at this time. Such a successful meeting will help to establish this comprehensive medical association as a permanent organization in the medical life of the Pacific Northwest.

#### LAST MONTH'S MONTANA MEETING

The meeting of the Medical Association of Montana at Lewistown was up to the usual high standard of excellence both as to scientific material and hospitality. There were no dull moments, for as soon as a session at the Junior High School would be adjourned some form of entertainment would be awaiting the members and visitors at "Pick Handle" Burke's Hotel, at some of the local physicians' offices, at the Country Club or over the hills and valleys.

The meeting of the Montana Public Health Association was held on the two preceding days and the Montana eye, ear, nose and throat men met the preceding evening. Both of these meetings offered additional attractions and brought visitors from distant points. The Rotary Club entertained many of the members at luncheon Wednesday noon, and the next day a special luncheon was provided, at which the visiting ladies were present. The smoker at the Country Club was most informal and good-fellowship was everywhere in evidence. An orchestra of college boys donated their services and they were in constant demand until Dr. Gans took his seat at the piano and led the crowd in songs of all colleges. Then followed an experience meeting with Dr. Swift of Seattle, and Dr. Myerding of Rochester in the chief roles. Particularly touching and timely was a silent toast to the memory of Dr. Donald Campbell of Butte.

The scientific papers were of an especially high character, the work on tuleremia and on tick fever being of such importance as to deserve national publicity. Dr. Plummer of Rochester gave a talk on the diagnosis and treatment of exophthalmic goiter in his usual quaint but scholarly style, which was sparkling with epigrams and wit. Dr. Pemberton, also of Rochester, was unable to attend but his place was ably taken by his colleague Dr. Myerding

who gave an excellent paper on bone tumors. Dr. Swift had the undivided attention of the meeting during his splendid talk, illustrated by lantern slides, on the use of air in the diagnosis of intracranial conditions. Other speakers from distant points were Dr. Woodward of the legal department of the American Medical Association; Dr. Lord, professor of orthopedic surgery at the University of Nebraska; Dr. Woodruff of Chicago, who gave a paper before the eye men the previous evening, and Dr. Coe of Seattle, who read a paper on the recent work on sympathectomy in the treatment of spastic paralysis.

The House of Delegates met frequently and transacted a large amount of business in a most efficient manner. Among other things it was decided after a thorough discussion to continue Northwest Medicine as the official journal of the Association, dividing the state into districts for editorial purposes; also to support the project of the Glacier National Park meeting of the Pacific Northwest Medical Association for next year and to combine the state medical meeting with it. The attendance was considerably less than usual, due to the temporary repair work on the Milwaukee railroad, which made it rather difficult to make good connections.

#### THE SEPTEMBER MEETINGS

Since the Pacific Northwest Medical Association is accustomed to schedule its date of meeting late in June or early in July, the state associations have wisely adopted the fall for their annual meetings. In September the state associations of Oregon, Washington and Idaho will hold their customary sessions. When the larger organization became established as a factor in medical affairs of the Northwest, the fear was expressed by many that the state meetings would degenerate to insignificance. The provision for several months breathing space between the two permits a period of recuperation, so that members of the different state associations are prepared to attend and support their respective annual meetings, stimulated perhaps by the inspiration from contact with the notable men of our profession, whom they have heard at the Northwest meeting.

All of us should be loyal to our own state organizations. They need our support and we should put into them an interest and enthusiasm that will make them as successful and forceful as possible. Each has its own business to transact and problems to meet which can be carried through satisfactorily

only by the organized support of its members. Every state association has a group of enthusiastic, up-to-date members, as capable of working out scientific problems as can be found in any part of the country. These are the men who should appear on the programs of the state meetings, and aid their fellow practitioners by the presentation and discussion of medical and surgical problems common to all. Let us all attend the September meetings and make them as successful and worth while as any in the history of each organization.

### THE MEDFORD MEETING

Elaborate preparations are being made for the meeting of the Oregon State Medical Society at Medford, Sept. 2-4. It is expected there will be a large attendance. Members are urged to bring their families and make the trip to the Oregon Caves and Crater Lake before returning home. This will be an ideal time for such an outing. The sessions of the State Society and Public Health League will be held in the lodge room of the Elks Temple, which is within easy reach of the depot and all hotels.

On the evening of September 2 there will be a public meeting under the auspices of the Oregon Public Health League, at which several well known speakers will discuss subjects of public interest. On the evening of September 3 the annual banquet will be held at the Medford hotel. At this annual meeting there will be elected two councillors and a delegate to the American Medical Association. In connection with the public meeting of the society will be held the annual meeting and election of officers of the Oregon Public Health League, membership of which is comprised of the entire membership of the Oregon State Medical Society.

The program of the meeting follows. It is to be noted that it is made up almost entirely from the membership of the society. As matters of considerable importance are to be presented at this meeting, it is hoped there will be a full attendance.

#### PROGRAM

President's Address: The All Round Good Doctor—Then and Now. Dr. Alfred C. Kinney, Astoria.

Some Features in the Diagnosis and Treatment of Gallbladder Diseases. Dr. C. A. Hamann, Cleveland, Ohio.

Symptoms of Ureteral Stricture. A study of One Hundred Cases, with Synopsis of Fifty Cases, with Lantern Slides. Dr. Alexander H. Peacock, Seattle.

Surgery of Chronic Dysentery. Dr. Robert C. Coffey, Portland.

Surgical Paper. Dr. R. J. Conroy, Medford.

Considerations in the Use of Radium. Dr. Otis B. Wight, Portland.

The Forming of Surgical Opinion in Lower Abdominal Cases. Dr. Eugene W. Rockey, Portland.

Chronic Ureteritis as a Source of Abdominal Pain. With Lantern Slides and Case Reports. Dr. H. W. Howard, Portland.

Pyuria. Significance of its Presence or Absence in Urological Conditions. Dr. John G. Cheetham, Portland.

Treatment and Care of the Patient Infected with the Parasite of Syphilis. Dr. H. M. Greene, Portland.

Twenty-four Hours of a General Practice. Dr. Warren L. Hunt, Klamath Falls.

Morphin-Scopolamin Narcosis in Obstetrics. Dr. Albert W. Holman, Portland.

The Gwathemy Method of Anesthesia in Obstetrics. Dr. Charles E. Hunt, Eugene.

Prolonged Labor. Dr. J. T. MacKay, Hillsboro.

Summary of Present Day Treatment of Eclampsia. Dr. C. J. McCusker, Portland.

The Effect of Iodine Deficiency Upon the Human Thyroid Gland. Dr. J. Earl Else, Portland.

Studies and Results of Thyroid Work. Dr. Thomas M. Joyce, Portland.

Relative Benefits and Responsibilities of the Oregon Compensation Law. Dr. A. C. Crank, Portland.

Thoracic Adenitis. Dr. E. A. Pierce, Portland.

### THE WASHINGTON ANNUAL MEETING

The Washington State Medical Association will hold its annual meeting in Seattle, at the Olympic Hotel, September 17-19, 1925. The program committee is planning what they consider a very splendid program. In addition to papers given by the Washington men, there will be papers by Dr. Henry Christian of Boston, Dr. Ellis Jones and Dr. I. H. Jones of Los Angeles and Dr. John Lundy of the Mayo Clinic. As all of these men are well known to the profession of the Northwest, they anticipate a large attendance at this meeting.

The secretary is arranging to forward to each member of the Association the reports of the different committees, with the full program, two weeks in advance of the date set for the meeting, with the hope that the members will read these reports and make to their delegates any suggestions which they may have concerning these committee reports, so that such suggestions may be discussed before the Board of Trustees and House of Delegates at their annual meeting on the morning of September 17. While the state meeting has been placed late enough to avoid the usual convention rush which is present during the summer months, it might be well for out of town men to make reservations direct with the hotel some weeks in advance of the meeting.

### THE IDAHO MEETING AT POCATELLO

In last month's issue was published the program of the annual meeting of the Idaho State Medical Association, which will be held at Pocatello, Septem-

ber 3-5. In addition to the speakers noted, there will be a paper by Dr. Joseph C. Beck of the Medical Department of the University of Illinois. One or two other well known speakers will be added to the program. The profession of Pocatello is making extensive preparations for this meeting, and every member who can plan to do so should be present at this session. Everyone will be guaranteed a cordial reception and entertainment that will be well worth while a visit to this section of the state. A large attendance is anticipated.

### NORTHWEST MEDICINE ANNUAL MEETING

At the time of the Pacific Northwest Medical Association annual gathering at Portland, the annual meeting was held of Northwest Medical Publishing Association, the corporate body which controls NORTHWEST MEDICINE. At a luncheon were assembled the trustees, editorial staff and guests. Beside annual reports and other business transacted the following officers were elected for the ensuing year: President, Dr. H. D. Dudley, Seattle; vice-president, Dr. C. J. Smith, Portland; secretary and editor-in-chief, Dr. C. A. Smith, Seattle; business editor and treasurer, Dr. Jas. B. Eagleson, Seattle.

### MEDICAL NOTES

#### OREGON

**State Divided into Districts.** Recently, the councillors of the State Medical Association divided the state into eight districts according to constitutional provision, with a councillor assigned to each. Each councillor will have as one of his special functions the authority to enroll all available physicians as members of the state association. It is aimed to acquaint all physicians with the advantage of being enrolled with the regular profession of the state.

**Hospital Contract Let.** The state board of control has awarded a contract for the construction of a new wing to the Eastern Oregon State Hospital at Pendleton. It will be of three stories and basement, for which \$225,000 was appropriated. A contract was also let for the construction of a new dormitory at the state school for the feeble-minded, which will cost \$32,900.

**New Hospital Opened.** The new Wesley Hospital as Marshfield, was opened for reception of patients last month. It contains all of the equipment of a modern hospital, and is prepared to do the work of an up-to-date institution.

**New Hospital to be Built.** A permit has been granted for the erection of a hospital at Klamath Falls, by Dr. Soule. It will be a brick and concrete building, 44 by 80 feet, two stories in height, to cost \$10,000.

**Coos-Curry Counties Medical Society** held a monthly meeting at Marshfield, July 7, with eleven physicians in attendance. In the absence of the president, Dr. Lowe, vice-president, presided. Dr. Osborn of Marshfield read a paper on "Status Lymphaticus."

**Elected Councilman.** Dr. A. B. Starbuck, of Dallas, has been elected councilman. He was elected at a council meeting to succeed a member who had resigned.

**Physician wanted.** An appeal for a physician has been made by the Grange at Bartlett, Wallowa county. It is stated here is a community of about seven hundred persons without a physician. These citizens want a medical man to settle in their midst.

**Dr. L. C. Hobson**, who has resided for the past two years at New Orleans, La., has returned to Eugene, where he will continue practice.

**Dr. L. A. Steeves**, of Dallas, has gone East for a period of study. Upon his return he will locate for practice at Salem.

**Dr. Harry Bouvy**, formerly of LaGrande, has located for practice at Portland.

**Medical Wedding.** Dr. Guy Mount, of Oregon City, was married, July 11 to Miss Gertrude L. Thomas of that city.

#### WASHINGTON

**Hospital to be Enlarged.** Tacoma General Hospital will be enlarged by the erection of a new wing to cost \$200,000. It will parallel the present south wing and be of similar construction. Two floors will be for private rooms, third and fourth being devoted to obstetric cases.

**Hospital Under Construction.** The Longview Memorial Hospital at Longview is now under construction and will be completed by October 1. It is a three-story and basement structure of reinforced concrete and will cost \$200,000.

**Modern Hospital Planned.** A modern hospital to cost \$10,000 is to be constructed at Tonasket by Dr. E. M. Bevis. It will be built by remodelling a residence, for the accommodation of twelve patients.

**Addition to Sanatorium.** It is proposed to purchase ten acres of land adjoining Firland tuberculosis sanatorium at Seattle. Growth of the city and increase of patients call for an extension of the institution.

**Septic Tank Discussion.** There has been much discussion and agitation in Seattle relative to the construction of septic sewage tanks on the shore of Lake Washington. Some of these have been constructed in close proximity of residences in spite of vigorous opposition of property owners. The agitation has resulted in a plan for the construction of a main sewer to be connected with all the laterals, which will reach Puget Sound by an adequate long tunnel beneath the hill separating Lake Washington from the Sound.

**Lack of Sewage System Demands Annexation.** There is a large resident population outside the northern limits of Seattle. The absence of any

sewage system has resulted in the alternative of Dr. H. T. Sparling, county health officer, for annexation to Seattle or construction of an independent sewage system.

**Appointed County Physician.** Dr. Henry Storgaard, of Yakima, has been appointed county physician and deputy health officer by the county commissioners. He succeeds Dr. C. C. McCown, whose death recently occurred.

**Reappointed Health Officer.** Dr. E. L. Brinson, of Bellingham, has been reappointed Whatcom County Health Officer by the county board of commissioners. The term is for two years.

**Reappointed Superintendent.** Dr. J. W. Doughty, who for the past twelve years has been superintendent of the Northern State Hospital at Sedro-Woolley, has been reappointed to that position by Governor Hartley.

**Physicians Appointed to Army.** Drs. O. B. Schroeder and D. S. Kellogg, who have recently served as interns in Seattle City Hospital, have been appointed first lieutenants in the Medical Corps of the Regular Army. They have been ordered to the army medical school at Washington, D. C.

**Dope Informer Convicted.** Walter J. Clausen, who was the dope informer in suits against Dr. W. A. Shannon, Seattle, and Dr. Balabanoff, Tacoma, was last month convicted and sentenced. Both of these suits were recognized as frame-ups against the doctors.

**Dr. J. W. Johnston,** who has practiced for a number of years at Sitka, where he was physician for at Seattle.

**Dr. E. B. Nelson,** who has been at San Diego, Calif., for the last year and a half, has located for practice at Spokane, where he had previously practiced until two years ago.

**Dr. P. H. Henderson,** recently from Kansas City, Mo., has located for practice at Longview, where he will be in partnership with his father.

**Dr. S. A. Keim** has located for practice at Wenatchee. He has recently been engaged in hospital work in Chicago.

**Dr. C. L. Moad,** who has practiced for the past nine years at Spangle, has located for practice at Fairfield.

**Dr. C. H. Hurst,** formerly from Kentucky, has located for practice at Oakesdale.

**Dr. H. S. Foskett,** of Spokane, has moved to Pasco, where he will continue practice.

**Dr. C. V. Cleveland,** formerly of Newport, has located for practice at Hillyard.

**Dr. John Darst,** who has practiced at North Bend, has located at Auburn.

**Dr. J. F. Mills,** who has resided for some time at Sedro-Woolley, has located for practice at Concrete.

## IDAHO

**New Hospital Planned.** A hospital is to be established at Malad City. The Peck Hotel building has been leased for that purpose, the cost for which will be maintained by citizens of the community.

**Sanitarium Completed.** The improvement work of the state institution at Lava Hot Springs has been completed. The improvement of buildings and grounds has cost \$35,000, which sum was appropriated by the last legislature. It is stated that beneficial results are obtained from treatment of patients by these hot springs.

**Dr. R. R. Craft,** who has been located for several years at Twin Falls, has moved to Nampa, where he will practice for the future.

## MONTANA

**Meeting of Public Health Association.** The annual meeting of the Montana Public Health association was held at Lewistown, July 6-7. The program comprised addresses and papers on many topics pertaining to public health and its relation to the medical profession.

**Dr. G. A. Townsend,** who has been connected with the hospital at Chico Hot Springs for the past fifteen years, has severed his connection with that institution and retired from practice.

**Health Officer Resigns.** Dr. W. H. Pickett, who has served as health officer for the past two years for Great Falls and Cascade county, has resigned this position.

**Dr. D. S. MacKenzie** has returned to Havre to resume practice. About a year ago he moved to Long Beach, Calif.

**Dr. B. C. Farrand,** who has lived for some time at Miles City, has located for practice at Jordan.

## OBITUARIES

**Dr. John W. Mowell,** of Olympia, Wash., died July 7 of intestinal carcinoma, at the age of 64 years. He was born in Westmoreland county, Pa., in 1861. He was educated at the state normal school at Warrensburg, Mo., and in 1888 graduated from Missouri Medical College, now Washington College, at St. Louis. In 1889 he located at Tumwater and the following year moved to Olympia. He was the chief medical adviser to the first industrial insurance commission in this state, from 1911 to 1917, and was chairman of the state medical aid board from 1917 to 1921. He possessed unusual professional attainments, having paid special attention to anatomy and physiology. He published bulletins on fractures which were recognized as authoritative in some respects. He possessed a kindly disposition which endeared him to many professional and lay friends.

**Dr. Charles C. McCown,** of Yakima, Wash., died June 20, after a prolonged illness, at 69 years of age. He was born in Indiana in 1856. He graduated from Louisville, Ky., medical college in 1882. He first practiced at Washington, Ind. He practiced in the state of Washington for twenty-two years, first at Vancouver, later at Prosser and Grandview

before locating at Yakima. For the past four years he has been the city-county health officer for Yakima county.

**Dr. L. E. Hanson**, of Wallace, Ida., died at Spokane, Wash., July 15, after having been ill for a long period with Bright's Disease. He was forty-six years of age. He was born in Deer Park, Wis., in 1879. He studied pharmacy at the University of Minnesota. In 1901 he settled in Wallace in the drug business. Later he entered the University of Pennsylvania medical School, from which he graduated in 1909. He then located for medical practice at Wallace. He was interested in various mining enterprises and was an officer in several companies. He was active in various public enterprises of the city and community.

**Dr. Claude M. Pearce**, of Portland, Ore., died June 24, after an illness of six months, at forty-eight years of age. He was born at Pilot Rock, Ore. He graduated from Jefferson Medical College of Philadelphia. For many years he practiced at Sumptner, Ore., later being established at Baker. After army service during the war, he located at Portland.

**Dr. W. C. Hawk**, of Tillamook, Ore., died July 9, following injuries sustained in an automobile collision a few days previously. He was born near Cumberland Gap, Virginia, in 1856.

## REPORTS OF SOCIETY MEETINGS

### PACIFIC COAST OTO-OPHTHALMOLOGICAL SOCIETY

PROGRAM AND ABSTRACT OF PAPERS READ AT ANNUAL MEETING OF PACIFIC COAST OTO-OPHTHALMOLOGICAL SOCIETY, HELD AT VANCOUVER, B. C., JUNE 18-20, 1925

After welcoming the visitors, Dr. Cunningham, of Vancouver, President of the Society, touched briefly on the "Many Unsolved Problems in Eye, Ear, Nose and Throat Work," referring particularly to the etiology of glaucoma, trachoma and cataract. He reported a case of congenital atresia of the post-nasal choanae with complete obstruction, in which sinuses were fully developed. He considered a case of this kind absolutely disproved the pneumatic pressure theory of development of the sinuses. He also dealt with recent advances in the study of cardiospasm, referring to the work of Plummer of the Mayo Clinic, Jackson of Philadelphia and Mosher of Boston. He mentioned some work he was doing on this subject in conjunction with Dr. H. H. McIntosh of the Vancouver General Hospital, on which he had hoped to make a preliminary report, but they had decided it would be premature to do so at the present time.

Dr. Gordon B. New, of the Mayo Clinic, gave three lantern slide demonstrations, the first dealing with advances in the treatment of congenital and acquired deformities of the face and neck, particularly saddleback and luetic noses and rhinophyma. He advocated the use of full thickness skin grafts rather than Thiersch grafts in the plastic repair of these

cases, bringing the flap down from the forehead. In cleft palate and hare lip operations he recommended the two stage operation with the use of lead plates to prevent postoperative flaring of the nasal alae.

In his second lecture on "Malignant Tumours of the Nose and Throat" Dr. New drew special attention to nasopharyngeal tumors, the most commonly overlooked of all growths of the head and neck. Twenty-five to 30 per cent of these cases have neurologic symptoms only; 40 per cent come primarily to the internist, only a very small percentage coming primarily to the laryngologist. The results of treatment are not good, as patients are seen so late in the disease. He discussed the relative merits of radium, diathermy and surgery in treatment of these tumours.

In his third lecture on "Unusual Lesions Seen First by the Laryngologist," he drew attention to cases of acute and chronic leukemia which are easily mistaken between pathologist and laryngologist. He referred to the value of the differential blood count in diagnosis of these conditions. Other unusual lesions seen by the laryngologist are pemphigus, thrush and actinomycosis. In 107 cases of the last named condition examined at the Clinic, only 7 had been correctly diagnosed beforehand.

It had been confidently anticipated that Dr. George Piness, of Los Angeles, in his paper on "Allergies of the Upper Respiratory Tract," would give results of the work carried on by him during the past few years, but beyond stating that they had cases relieved over a period of seven years, he would not make any statement as to final results. He outlined the symptomatology and methods of diagnosis of those conditions. Most allergies of the upper respiratory tract give a history of onset early in life. Every case of eczema and allergic coryza in infancy and childhood must be considered a potential asthma. All asthmas must be classed as chronic except those due to the introduction of a foreign protein. Angioneurotic edema is an allergic condition similar to the disease produced in a patient who eats foods to which he knows he has an idiosyncrasy but who does not react when tested against such foods. Another type of edema definitely allergic is that accompanied by an urticaria. Methods of diagnosis included a complete physical examination—x-ray, blood, urine and sputum examinations and protein studies against over 400 proteins; also in certain cases personal surveys of the environment and botanic surveys. He advised the cutaneous method of testing. The interpretation of reactions is important. Reactions may occur that are not true, but pseudo or skin reactions. The true reaction is the one with a wheal and an erythema regardless of size. An analysis of reactions is the final criterion for determination of treatment. With regard to surgery in allergies of the upper respiratory tract, he said that out of a series of 834 cases not one had been relieved of his symptoms by operative measures. No man should promise an allergic individual

relief by surgery. Obstructive interference should be removed, regardless of the allergy. He was firm in his belief that Dr. Sluder's work on Meckel's ganglion is absolutely wrong and he urged upon the members present to be more conservative in their treatment of the allergic individual by surgical measures.

Dr. Edward Jackson, in his paper, "Ophthalmic Aspects of General Medicine," describing the eye as "the laboratory and clinic of the living body," said that from observations made in this laboratory were coming some of the great advances in modern medicine. The eye is peculiarly favorable for exact observation. It may be termed the bulletin board for diseases of the brain and spinal cord. As the observer on the mountain top gives fire protection to thousands of miles of forest, so the ophthalmologist by interpreting the signals given by the eye has command of a great territory of disease. The study of the living eye with the ophthalmoscope has bridged the gap between the studies of the dead house and the laboratory. The ophthalmoscope has doubled the clinical value of Harvey's great discovery, and training in its use by the general practitioner should, in the very near future, play as important a part in the observation of general disease as feeling the pulse did 70 years ago.

Dr. L. Klemptner, of Seattle, reported cases of "Bezold's Mastoiditis." One had perforation in mastoid tip, abscess in sternocleidomastoid muscle and abscess of sigmoid sinus. Another case had perforation at lower part of inner wall of mastoid in digastric fossa. A third had abscess in lateral pharyngeal wall. He discussed blood count in mastoiditis. The importance of differential blood counts in early stage of acute mastoiditis, when other symptoms are still doubtful or obscured by original disease, was illustrated by case reports.

Dr. E. Nelson Neulen, of Astoria, Ore., presented a case of "Central Retinal Hemorrhage, Synchronous with Onset of Menstrual Period," setting forth in detail the history and physical findings. The patient was seen as a refraction case, ten days before the onset of the hemorrhage, at which time, aside from a slight amount of astigmatism in each eye, no pathology was noted. While resting on a couch, the patient discovered that she had started to menstruate. At the same moment there was a sharp twinge in the right eye and total blindness, except for the slightest peripheral vision; left eye normal.

Upon examination the following day, a very extensive central retinal or preretinal hemorrhage was noted, sharply delimited or bounded by the inferior and superior branches respectively, of the superior and inferior temporal arteries, covering a sector of the disc and becoming broader as the region of the ora serrata was approached. The hemorrhage was dense, hiding all structures beneath and presenting upon the upper and lower limiting vessels six yellow, glistening nodules, three above and three below, which in their greatest diameter equaled or

exceeded the diameter of the vessel upon whose wall they seemed attached.

It was upon the shape, arrangement and appearance of these nodules that he particularly laid stress, a large colored fundus drawing of which was presented to bring out the details as observed at the first examination. All laboratory examinations were negative, with the exception of the von Pirquet, the skin reaction of which was most marked. The nodules had entirely disappeared by the end of the fifth day and the hemorrhage disappeared before six months had elapsed, with complete restitution, vision being better than 20-30.

The left eye soon showed signs of an episcleritis, later a scleritis and finally a sclerosing keratitis. This in spite of complete rest, the removal of all teeth, the greater number of which showed infection, as well as the removal of her tonsils, which were of a questionable nature. Tuberculin even in the smallest doses caused marked reaction in the left eye. The right eye showed no recurrence of hemorrhage nor any reaction during its administration. Two and a half years later the vision of the right eye remained normal. A second fundus drawing in color was presented, made at this time, to show the slight amount of pathology existing, which consisted of a small amount of depigmentation in and around the right macular region.

Dr. Arthur C. Jones, of Boise, Ida., read a paper on "Acute Ethmoiditis with Rupture into the Orbit." He stated its fulminating character leads to the belief that there is a chemical action which takes place. This view is further substantiated by the fact that in one case he found pus under such pressure that, when he opened the anterior ethmoidal cells, there was a sound of escaping gas accompanied by a spray of pus. In another case there were air bubbles mixed with the pus. It is true that bacteria growing under anaerobic conditions form a positive pressure. The more anaerobic, the greater the pressure. Under aerobic, the pressure is negative. The anatomic position of the ethmoids is such that a dead chamber is easily formed. The swelling of the middle turbinates is further augmented and reinforced by the secondary swelling of the inferior turbinate. This makes it easier for pus to break thru the lamina papyracea than to drop down the middle meatus.

Dr. Harry F. Macbeth, Seattle, presented a paper on "Some Applications of Ultraviolet Ray in the Eye, Ear, Nose and Throat Field," in which he stated that the ultraviolet ray is as definite a therapeutic agent as x-ray, differing only therefrom in being of longer wave length. Its properties being germicidal, analgesic and biologic, it may be applied to great advantage in several of the conditions which the specialist is called upon to treat. Its limitations are sharply defined. Owing to the fact that it is an entity which heretofore we have been entirely unfamiliar with, its application requires considerable experience. Results seem to

more than justify this effort. It is a most interesting vehicle with which to work the fields as yet untried.

Dr. E. F. Chase, Seattle, read a paper on "Lateral Sinus Thrombosis with Report of Five Cases," in which he dealt with the incidence of sinus thrombosis in operative mastoiditis, and gave a review of the anatomy of this region. The symptoms were briefly capitulated, and diagnosis, especially the differential diagnosis with determination of the involved side in bilateral mastoid involvement, was stressed. Five case histories were given in detail, which were vivified by twenty lantern slides.

Dr. Harry V. Wurdemann, Seattle, read an essay on "Eyesight, Education and Economics." Students, teachers and parents should know about the function of vision and care of the eye. Few animals have as good eyesight as man, and man uses his eyesight much more than animals. The human eye is a defective mechanical instrument and is in process of evolution, becoming more adapted to civilized needs. The eyesight of savage races and that of our ancestors was no better than what we have. Fifty per cent of the human race have defective eyes, which need some form of attention, either by correction of the refraction or treatment for disease. Owing to the efforts of medical and economic research workers, blindness is on the decrease, especially from preventive diseases, as gonorrhoeal ophthalmia, smallpox, and trachoma, the three great causes of blindness. That from other diseases is likewise being lessened, while congenital defects are probably on the increase, owing to the defectives not dying off in early life as they did in ancient times.

Attention was directed to the ill-advised application of people to uneducated persons for the relief of defective eyesight and eyestrain, and that the public, however, is becoming educated and more advised that the medical man is the only one to trust for their eyes. Examination of school children and industrial workers shows that 50 per cent of them have defective eyes and that the acquisition of an education and the output of industry is greatly helped by the work of the ophthalmologist in correcting defects and curing disease, and that thereby the general health, happiness and perhaps the morals of the community are benefited.

Dr. Merle C. Fox, Portland, read a paper on "Mucocele of Frontal Sinus, Operation and Recovery." Mr. N., age 54, first seen January 3, 1925, had marked proptosis of left eye which was directed downward, causing double vision above the horizontal meridian and at 20 degrees on either side. He complained of headache and confused vision, and showed a tumor the size of a walnut above the inner third of the left supraorbital ridge. The tumor was hard, smooth, slightly reduceable and gave no pain upon pressure. He gave a history of gradual onset, the trouble having lasted for a number of months. The tumor was larger at some times than at others. The pain and

difficulty with vision increased with the size of the tumor, until there would occur a gush of fluid from the left side of the nose, after which the symptoms and the tumor would subside for a time.

Palpation showed an oblong opening through the anterior wall of the sinus just above the supraorbital ridge, and another larger one above and to the outer side of the first, through which the tumor protruded. He had met with the fracture of the skull through the right orbit and frontal bone, involving the frontal sinus. The nose was also fractured.

The x-ray showed absence of the right frontal sinus and a very much enlarged one to the left. Parts of the anterior, posterior and inferior walls of the left frontal sinus were gone and the remaining portions very much thinned. Vision of the left eye was very much diminished; Wassermann negative and blood count normal.

Under general anesthesia a modified Killian incision was made; flap elevated to the extent of the anterior walls of the sinus, great care being taken to preserve the periosteum; anterior bony wall removed; sac dissected from bony walls of the sinus, dura and orbital contents. In removing the sac the periosteum was removed from the walls of the sinus, which was replaced by the periosteum in the flap taken from the forehead. No opening was made into the nose and, as all the secreting membrane had been removed, the wound was closed without drainage. Complete recovery in three weeks with 20-20 vision with correction.

Dr. Eugene R. Lewis, Los Angeles, considered "How Is Sound Heard?" Discussion of molecular motion; sound wave propagation through various media; air as compared with bone as a sound conductor. The mechanics of the external and middle ear; the compound lever system and its transmutation of sound energy, increasing intensity, decreasing amplitude; perilymph scala mechanism and its method of operation; endolymph scala mechanism and its method of operation. Sound waves themselves within the scala media do not constitute assurance of hearing; hearing requires actuation of the mechanism within the scala media. Comparison of hearing by bone conduction and by tragus conduction. How to construe the findings. Obstructive lesion shows positive tragus with negative Rinne. Perception impairment shows positive tragus. Normal shows positive tragus. Fixation shows negative tragus. This test is apparently a means of differentiating between fixation and all other conditions of hearing.

Dr. S. S. Howe, Bellingham, Wash, discussed "Jaw Winking." He presented a girl of nine with moderate ptosis of the right upper lid which only slightly follows the left when the patient looks upward. Vertical movement of the jaw causes the lid to be raised almost to the full extent and this is still further accentuated by movement of the jaw to the left, i. e., when the right pterygoids are brought into play. In mastication the lid moves synchronously with the

jaw. Otherwise the eyes are normal. The condition is congenital, being noted by her mother when the patient was a few hours old. It is evident that in this case the right levator palpebrae is supplied by a fibre from the mandibular nerve and, because of the above mentioned associated action, presumably the branches to the pterygoid muscles. The literature of allied cases was reviewed.

Dr. Kaspar Pischel, San Francisco, demonstrated his "Localization of Foreign Bodies in the Eye by Markers in the Conjunctiva." The geometric methods of localizing foreign bodies in the eye are very valuable, but they require a good deal of time, experience and rather complicated instruments which are not always at hand in hospitals. The sooner the foreign body is located and removed the better are the chances of saving the eye. Therefore, a method which would allow localization at the first radiogram is of value. This is accomplished by my method of putting markers on the eyeball itself. These markers must be of a form that can be easily and surely distinguished from the foreign body. I use as markers the points of fine sewing needles about 3 mm. long. No foreign body in the eye is apt to be of such a slender straight form. The posteroanterior and lateral radiograms will allow a fairly accurate localization of the foreign body, accurate enough in the majority of cases for all practical purposes.

Dr. Martin D. Icove spoke on the subject of "Intra-orbital Anesthesia in Ophthalmic Operations," outlining the method of procedure, describing the syringe and technic and, in ending, said that the reason so many men were disappointed in its results was because they did not allow sufficient time to elapse after induction before commencing to operate. They should wait at least half an hour. Dr. A. S. Green said the dangers were practically nil. The method had been in use in Paris for six years with no ill effects. He considered it the anesthetic of choice in all cases, where the eye had to be pulled upon or cut.

Dr. Chester H. Bowers, Los Angeles, read a paper on "Fibroma of the Larynx with Report of a Case in a Child of Three Years and Removal." Fibroma of larynx in children is infrequent. In search of literature, only one case encountered was under twenty-one. Because of rarity and interesting symptomatology case of some general interest.

Growth so large as to practically fill larynx. Extreme dyspnea present, especially when lying flat on back. Relieved by lying on stomach. Child thin, anemic and cyanotic at all times. Brought to Los Angeles from Mexico and x-rayed for foreign body in lung.

B. C., 3 years. Referred by Dr. J. M. Brown for examination because of difficult breathing and hoarseness. Onset several months ago when child became short of breath, especially on lying down. Attacks came on in evening, disappeared in morning.

Treated for asthma in Mexico. Gradually became worse until dyspnea present at all times.

Nose and throat examination negative except chronically infected tonsils and adenoids. Child pigeon breasted. All accessory muscles of respiration used in breathing. Respiration harsh, expiration almost inaudible. Fine crepitant rales and fine musical rales at end of inspiration. Blood and urine within normal limits. No palpable masses in abdomen.

X-ray report as follows: No evidence of presence of definite pathology in thorax. Heart and aortic shades slightly to left of normal. Right side of thorax slightly emphysematous and dome of diaphragm slightly flattened in appearance. Changes all slight and indefinite but suggestive of possibility of nonopaque foreign body in right bronchus. Advise careful examination of history and case to ascertain possibility of foreign body having been swallowed at time of appearance of symptoms.

Preoperative diagnosis, multiple papilloma of larynx. Laryngoscopy without anesthesia. Large oval mass seen, smooth outline, springing from beneath vocal cords near anterior commissure. On inspiration mass drawn downward, allowing fairly free air passage, but on expiration forced upward through vocal cords, its posterior extremity touching the posterior surface of larynx. Mass appeared firm and felt hard.

Because of its size and condition of child immediate low tracheotomy under ether performed. Ten days later attempt made to remove tumor without anesthesia. Tumor felt like cartilage. Three times snare passed over and wire broke. One week later another laryngoscopy done. Heavy wire used, loop passed with same difficulty over tumor and growth removed. Pathologic diagnosis, fibroma.

Two weeks later laryngoscopy revealed practically normal airway. Small stump seen at site of tumor. Tracheotomy tube removed. No difficulty in breathing. Tracheal wound healed in five days. Child able to talk clearly. Discharged from hospital.

Etiology of this large tumor in such a young child a matter of speculation. Chief difficulty in case was size of tumor, questionable if it could be removed without splitting larynx. Next, toughness of growth, as ordinary snare wire broke repeatedly.

Dr. F. T. Hyde, Port Angeles, Wash., reported a case of "Ligation of the External Carotid Artery for the Control of Idiopathic Nasal Hemorrhage." Ligation of the common carotid artery for the control of dangerous hemorrhage, or other serious conditions throughout its field of distribution, is not particularly rare, but in a review of the literature for the past five years I can find no other case of necessity for ligation of the external carotid as an emergency measure to control in idiopathic nasal hemorrhage. I used the word "idiopathic" advisedly in reporting this case, because neither cause nor pathology could be found for the condition. Altho a "dernier ressort," it is a safe, rational and quickly accomplished procedure, and should be mentioned in text books on diseases of the nose and throat.

The following is a report on such a case: Mr. A. R. is a Russian by descent, 51 years of age, a rancher by occupation. His first serious nose bleed occurred 16 years ago, since which time he has had frequent, severe nasal hemorrhages, hard to control. These attacks seem to start in the back of his head

with a sense of pressure which moves forward to his nose when bleeding begins.

The present attack began a week before I saw him. During this time he had been seen by several general practitioners who packed his nose and gave him various internal treatments without lasting effect. When I saw him on October 17 he had been in a country hospital for six days with multitudinous treatments and no result, and was pale, nervous and exhausted. After using nasal and postnasal packing, horse serum, hemoplastin, calcium lactate, hot and cold douches for 48 hours with only temporary benefit, and no means for transfusion being available, his left external carotid was ligated.

The external carotid supplies practically all the blood supply to the nose and the left was chosen because most of the bleeding was from the left, and his previous hemorrhages had usually been from this side. Through an anterior edge, sternocleidomastoid incision the artery was easily picked up and ligated. All bleeding ceased immediately. The man was discharged in ten days without incident, and remains well today.

Dr. Ira E. Gaston, Portland, read a paper on "Milk Injections in Ophthalmic Diseases." A large amount of clinical and experimental work has been done in an effort to determine the true status of nonspecific protein therapy. A great variety of protein agents have been employed and the treatment has been used in practically every ophthalmic disease, with an equally great variety of results. The wide variations in the results obtained apparently are due to the lack of uniformity in the protein agent employed, in the type of cases treated, and in the method of administration. Sufficient good results have been obtained to warrant the statement that the systemic reaction produced by injections of nonspecific proteins has considerable therapeutic value in the treatment of certain inflammatory ocular diseases.

The chief problems involved in nonspecific protein therapy are (1) the most suitable type of protein agent, (2) the best method of administration, (3) the selection of cases in which this form of therapy is indicated, (4) the way in which the therapeutic effect is produced. Numerous observations have shown that, in order to be effective therapeutically, the protein agent must be capable of producing a considerable general systemic reaction. This reaction is usually manifested by slight chill, rise of temperature of two or three degrees, sweating, nausea, nervous irritability and leucocytosis. Sterilized whole milk and antidiphtheritic serum have proved to be most effective in eliciting this systemic reaction.

It has been shown that the elements of whole milk most effective in producing the systemic reaction are bacteria and the products of bacterial metabolism. In the case of antidiphtheritic serum the anti-toxin globulins seems to be the most effective element. Intramuscular injection is the most favored method of administration.

Nonspecific protein therapy has been most effective in the treatment of acute and subacute inflammatory and suppurative conditions of the anterior segment of the eyeball, and in gonococcal infections of the conjunctiva. Milk injections may produce

serious results in cases of status lymphaticus and severe asthenia. Antidiphtheritic serum is usually not well borne by persons sensitive to horse serum.

The *modus operandi* of the nonspecific protein reaction is still undetermined. The general belief, however, is that the protein injection produces a stimulation and activation of the general forces of resistance, and in that way bring about the focal reaction or therapeutic effect.

The writer has treated nineteen cases of eye disease with milk injections, and secured benefit in all cases. The most striking results were observed in cases of infection of the anterior segment of the eyeball, following perforating injuries. One recent case has been treated with antidiphtheritic serum with apparently beneficial results. Aolan was found to produce much less systemic reaction than whole milk when given to the same patient. The systemic reaction following milk injections, as determined by the rise in temperature, was shown to correspond in a general way to the bacterial count of the milk used; but slight variations in the bacterial count did not always produce like variations in the systemic reaction.

Conclusions: (1) The systemic reaction produced by milk injection is a valuable therapeutic aid in certain ocular diseases; (2) bacteria and the products of bacterial activity are more potent in producing this reaction than other forms of protein; (3) the numerous phenomena of the reaction produced by protein injections cannot all be explained in the light of our present knowledge of the subject.

Dr. Gaston's paper led to a spirited discussion as to whether better reactions were obtained by whole milk than by the use of preparations, such as aolan, kaseosan, etc., and whether any therapeutic results could be attributed to the injections. Dr. Wurdemann thought, if any good was accomplished, it was by the reaction of the system to the bacterial products and the general opinion appeared to be that the more contaminated the milk the better the results obtained.

Dr. Josiah S. Davies, Tacoma, reported the following case: Kaji, Mrs. S., Reg. No. 16936. Date of operation, Jan. 7, 1925. Dr. Davies. Operation: Enucleation of eye. Laboratory No. 5299. Tissue: Eye. Clinical diagnosis: Not given. Microscopic diagnosis: Adenocarcinoma of the eye.

Ten weeks ago patient noticed that vision in left eye was becoming defective. About six weeks ago noticed that left eye was more prominent than right and for the past week there has been pain in left eye ball, and some soreness to the touch. General health good. Family and personal history negative. Weight 140 pounds, and there has been no change in weight the past year. Has three healthy children.

General physical examination reveals no indication of cancer or other abnormality. Wassermann negative. Right eye negative; left eye shows some proptosis. Impossible to invert upper lid. There is little congestion of bulbar conjunctiva near limbus. Left eye shows slight swelling at the disc; blood vessels are engorged; there is a bright spot in the

center of the disc. No definite hemorrhages to be seen. X-ray shows no deformity of the orbit. There is equal motility in all directions, but motion limited.

A Kroenlein operation was done. A section of tumor was removed from the posterior portion of the orbit. The tumor mass seemed to surround the nerve, but was not connected with it, and seemed to displace the globe in a forward direction only. There seemed to be no connections whatever with the globe or with the lacrimal glands. Pathologist's report on frozen sections was malignant carcinoma. After this report was obtained the orbit was eviscerated and fifty milligrams of radium was left in the orbit for twelve hours. Postoperative condition was very good.

Pathologist's report is as follows: Microscopic sections show an almost solid mass of carcinoma cells. These are small, round or slightly polygonal cells, arranged in broad groups. In places they form small lumina. There is a generous supporting stroma of dense, fibrous tissue.

This patient was seen June 15, 1925. Socket looked good; was healed and there was no indication of recurrence. Her health good and weight normal.

Dr. H. G. Merrill read a very interesting paper on "Light Sense" and described the method of measuring or testing the light sense by means of Percival's rotary disc, demonstrating that the measurements of the light sense has considerable practical value. Dr. Wurdemann, in discussing this paper, referred to it as one of the most important papers presented. The testing was simple, easily and quickly made, and would become a routine method test.

At the business meeting followed the scientific program, San Francisco was chosen for the next meeting place and the following officers were elected:

Dr. Kaspar Pischel, San Francisco, President; Dr. Glen Campbell, Vancouver, B. C., First Vice-President; Dr. Edward Neher, Salt Lake City, Second Vice-President; Dr. Walter F. Hoffman, Seattle, Secretary-Treasurer.

#### MONTANA ACADEMY OF OTO-OPHTHALMOLOGY

The fourth semiannual meeting of Montana Academy of Oto-Ophthalmology was held in Lewistown, Mont., July 7, 1925.

The guests of honor included Dr. W. H. Woodruff of Joliet and Chicago, Ill., who presented a paper and moving pictures on "The Tuck Tenotomy and Transplantation of the Ocular Muscles" and "Deep Iridectomy for Glaucoma," and Dr. George W. Swift of Seattle, who presented a paper on "Increased Intracranial Pressure."

Dr. J. G. Parsons of Lewistown presented a paper on "Frontal Sinus," and Dr. Charles F. Coulter of Great Falls discussed "Vertigo."

It was decided that the next semiannual meeting of the society be held in Butte in January, 1926. The society was entertained by a luncheon and banquet at the Hotel Fergus.

## BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

**Clinical Features of Heart Disease.** By Leroy Crummer, M. D. Professor of Medicine, University of Nebraska. Introduction by Emanuel Libman, M. D. Cloth. 353 pp. \$3.00. Paul B. Hoeber, Inc., New York. 1925.

Ever since the war there has been an unusual literary output concerning the heart. During the war there was special opportunity to study the heart as it had never been studied before, in the light of what had been learned by instruments of precision, such as the ink polygraph and electrocardiograph. It might be noted in passing that the percentage of errors in diagnosis seemed to increase in direct ratio to the adherence given to these instruments, that is, the devotees of the instruments were almost invariably wrong. However, the clinicians who had retained their clinical knowledge and had not become technicians, had benefitted enormously by the recent additions to our knowledge of the heart and were able to apply them with sense and profit to the patient. The literary output has been very large in consequence, being good, bad and indifferent. Some has been excellent but rather over the heads of the majority who do not think in terms of the electrocardiogram.

In the present book the author seems to strike just the right middle ground and to present the subject of heart disease in the light of recent instrumental illumination, combined with a large practical experience in the late war. The book is not illustrated at all, except by figures of speech, so that the reader may not have the boggy of electrocardiograms staring him in the face. Naturally there are some points with which the reviewer would disagree, as when the author states that in aortic stenosis "there is slight change in the position of the apex beat because the hypertrophy present is concentric." This disease is often of longer duration than any other serious valvular lesion and the heart usually becomes enormously enlarged in the later stages. The reviewer has had the unusual opportunity to see a good many of these hearts during life and at autopsy, because they are extremely rare. On the other hand, the author is undoubtedly right when he says that "clinical diagnosis of aortic aneurism must yield to roentgen diagnosis."

One hears constantly from the mouths of supposedly able clinicians that one must rely on physical exploration and not weakly rest on the x-ray in the diagnosis of aortitis and aneurism. If the desideratum is to wait till one can hang his hat on an aneurism, or diagnose aortitis when it is so far advanced that treatment is of no use, all well and good, but routine examination of the heart and aorta by fluoroscope is indicated, when there is any suggestion of cardiovascular disease.

The reviewer would differ from the statement that "quinidine properly administered will check fibrillation in about half the cases." The figure would be nearer 10 per cent. The value of the electrocardiograph in indicating myocardial degeneration at an earlier time than can be determined clinically by

any other method is undoubtedly going to be its greatest addition to medicine, as the writer points out. The instrument has recently been greatly simplified also, which will bring it into more common use. Most of the cardiac irregularities may be easily diagnosed without electrocardiograms but some of the heart blocks may elude ordinary clinical examination.

The author emphasizes the cardiac pain, palpitation and anxiety first brought out by Krehl, and usually due to coitus interruptus. The differentiation between angina pectoris and coronary thrombosis is very clearly described. Altogether this work appears to be a very reliable, clear and sensible discussion of diseases of the heart for the general practitioner and is highly commended.

WINSLOW.

**The Newer Knowledge of Nutrition.** The Use of Foods for the Preservation of Vitality and Health. By E. V. McCollum, Ph.D., Sc.D., Professor of Chemical Hygiene, Johns Hopkins University. Illustrated. Third Edition, entirely rewritten. Cloth, 675 pp. The Macmillan Co., New York, 1925.

After three years we have another edition of what is without any doubt the leading treatise on the subject today. The book has truly been wholly rewritten in view of the enormous amount of work done in this field, abounds in references to all independent workers, and moreover is supplied with over 100 pages of alphabetically arranged bibliography in the back. But notwithstanding this generous and free discussion of all other works on nutrition, nobody who knows the authors will for a minute be in doubt as to the decided personal views to be found herein.

Special chapters are given to iodine deficiency, goiter and to rickets. The authors question the wisdom of giving iodine rather than thyroxin in adolescent goiter. Thyroxin, they believe, rests the gland. The new vitamin, X or E, which is apparently essential for fertilization, is discussed in many parts of the book. This substance is found in lettuce, meat, whole wheat and wheat germ, rolled oats, dried alfalfa and milk fat.

Perhaps the most generally practical and interesting chapters are those on diet during pregnancy and lactation, as affecting the nutrition of the suckling, and the diet in relation to the teeth, and that on the dietary habits of man. Milk and salads of lettuce, celery and tomatoes, together with spinach and beet greens, will supply vitamins and especially a sufficient supply of calcium for the nursing mother to pass along to the suckling in her milk.

And this brings us to the question of diet in relation to teeth. The authors feel we are beginning at entirely the wrong end of the question with all our elaborate dental technic, whereas the prophylaxis is so much more important. The remark of a leading dentist at a meeting of dentists is quoted, to the effect that "most of the sound teeth in the world existed before the advent of the tooth brush." The skulls of many primitive people show a lack of

tooth decay. The most beautiful specimens of teeth have been found in the Sioux tribes of early days, and now among the Eskimos. Indians going to London from America were chiefly struck by the absence of teeth in the English and attributed this to the "number of lies passing over them." The cause of the inferior teeth of present day Americans the authors attribute to improper feeding of the pregnant and nursing mother, and later to lack of proper exercise of the teeth in biting on any tough or hard food. The reviewer knows a dentist who has brought up a large family of children with healthy teeth by making them gnaw bones at the table and he believes faulty teeth are due to elegant table manners. The authors advise the use of coarse food, as whole wheat or oatmeal or other grain and say that refined food, as soft material, coats the surface of teeth, leads to fermentation and destruction of enamel with decay.

The discussion of the dietary of man in various parts of the globe is as interesting as it is instructive. The most valuable book on nutrition today.

WINSLOW.

**Abt's Pediatrics.** By 150 specialists. Edited by Isaac A. Abt, M. D., Professor of Diseases of Children, Northwestern University Medical School, Chicago. Set complete in eight octavo volumes totaling 8000 pages with 1500 illustrations, and separate Index Volume free. Now ready—Volume VII containing 879 pages with 70 illustrations. Philadelphia and London: W. B. Saunders Company, 1925. Cloth, \$10.00 per volume. Sold by subscription.

This volume should be part of the armamentarium of every physician who comes in contact with the physical and mental problems of childhood. It not only deals adequately with organic pathology, but it treats intelligently the psychopathology of childhood.

In a volume of such proportions and uniform excellence, chaptered by recognized authorities, it is difficult to single out articles for comment. Chapters on the physiology of the nervous system in early life, infantile cerebral palsies, surgery of the head and spine, convulsions in infancy and childhood, the neuroses and acute poliomyelitis are of unusual interest and completeness.

The most neglected field of pediatric practice, that of psychopathology and psychotherapy, is handled with a compelling sanity and comprehension that marks the evolution of this subject from the field of sensationalism and Sunday supplement style to that of true psychology. The style is arresting. Much is conveyed by the description of the child as "a pleasure-seeking pain-avoiding animal which ignores reality."

It were well if the chapter by Jelliffe on the sexual life of the child were in pamphlet form in the hands of every intelligent parent and teacher. It tokens the time when knowledge of this subject, affecting so vitally the effective life of child and adult, passes from the realm of ignorance, chance knowledge, and false modesty to that of intelligent understanding and appreciation.

McCOWN.

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**Approaching Motherhood.** Questions and Answers of Maternity. By George L. Brodhead, M. D., Visiting Obstetrician, Bellevue and Allied Hospitals, Harlem Division, New York City. 193 pp., \$1.50. Paul B. Hoeber, Inc., New York. 1925.

This little volume is intended to impart instruction to the woman approaching motherhood, who seeks information on a variety of subjects pertaining to her condition. It is not intended to take the place of a doctor's care, but contains much valuable instruction in answer to a variety of questions which arise in the mind of every pregnant woman. Some of the chapter titles suggest the topics considered, such as when to visit the physician, discomforts of pregnancy, popular fallacies, exercise and diversion and miscarriage. Other topics of similar purposes are discussed. It is a useful book for the condition under consideration.

**Pediatrics.** The Practical Medical Series, 1924. Vol. IV. Edited by I. A. Abt, M. D., with the collaboration of Johanna Heumann, M. D. 379 pp. \$2.00. The Year Book Publishers, Chicago.

For the first time, the Practical Medical Series presents a separate volume on pediatrics, hitherto pediatrics and orthopedics having been combined. The pediatric literature for 1924 is summarized, American literature being extensively covered and British and French well represented. Progress in control of the contagious diseases of childhood is well presented, since during 1924 important contributions were made in this field. Considerable material on mental and nervous diseases is found in the pediatric literature for the year. The Year Book is well arranged and indexed, so that the contained material is readily available.

MOHR.

**A Compend of Diseases of the Skin.** By Jay Frank Schamberg, A. B., M. D., Professor of Dermatology and Syphilology, Graduate School of Medicine, University of Pennsylvania, etc. Seventh edition. Revised and enlarged. With 119 illustrations, 316 pp. \$2.00. P. Blakiston's Son and Company, Philadelphia. 1925.

This book is intended as a rapid reference work and key to the study of dermatology. The author presents a brief consideration of all diseases of the skin, with instructive suggestions as to treatment. The text is supplemented by illustrations which serve to amplify the former. It will be found useful as a desk book for reference by the practicing physician.

**A Compend of Obstetrics.** Revised and Edited by Clifford B. Lull, M. D., Instructor of Obstetrics, Jefferson College, Philadelphia. Tenth Edition, with 54 illustrations. 283 pp. \$2.00. P. Blakiston's Son and Company, Philadelphia. 1925.

This little volume contains the essence of the principles and the practice of obstetrics. It is intended as a handy, concise reference book for the general practitioner. Consequently conditions under discussion and not entirely proven have not been presented in detail. The illustrations are such as to supplement the text and illustrate operative procedures. It accomplishes successfully the purpose for which it is presented.

**Oxford Medicine.** By various authors, edited by Henry A. Christian, A. M., M. D., Hersey Professor of Theory and Practice of Physic, Harvard University, etc., and Sir James Mackenzie, M. D., F. R. C. P., L. L. D., F. R. S., Consulting Physician to the London Hospital, etc. In six volumes, illustrated. Oxford University Press, London and New York, 1925.

Supplements to Oxford Medicine have been published which bring this set up to date. The following list of topics and authors are a few of the subjects considered in detail in these supplements: Boothby and Plummer offer the latest information regarding diseases of the parathyroid and thyroid glands; nephritis, in its various types, is presented extensively and in much detail by Christian and O'Hare; diseases of the stomach, by Alvarez, covers all phases of this subject, while Sippy devotes himself to ulcer of the stomach and duodenum. This system of medicine is quite worthwhile and its value is enhanced by these latest additions.

**The Medical Clinics of North America.** (Issued Serially.) One number every other month. Volume VIII, Number VI (Boston Number, May, 1925). Octavo of 278 pages and 47 illustrations and complete index to Volume VI. Per clinic year (July 1924 to May, 1925): Paper, \$12.00; Cloth, \$16.00; Philadelphia and London. W. B. Saunders Company.

This Boston number discusses important medical conditions. Davidson considers end-results of the medical treatment of peptic ulcer. In conclusion he asks, "Is surgery ever the method of choice?" Such conditions as perforation, uncontrollable hemorrhage or obstruction due to cicatrices cannot be eliminated except by surgery. Most other cases should receive medical treatment. He says that surgery in itself rarely removes those factors responsible for the initial appearance of the ulcer, and continued medical supervision is as necessary in operated as in unoperated cases. Joslin and associates present an extensive discussion of diabetic coma and its treatment. Other equally valuable clinical discussions are presented.

**The Surgical Clinics of North America.** (Issued serially, one number every other month.) Volume IV Number III (Mayo Clinic Number, June, 1925). 260 pages with 115 illustrations. Per clinic year (February, 1925 to December, 1925): Paper, \$12.00; Cloth \$16.00 net. Philadelphia and London. W. B. Saunders Company.

This Mayo number is replete with a large amount of valuable instruction. Six contributors discuss surgical conditions of the intestinal tract, among which Dr. C. H. Mayo's brief and conservative consideration of the stomach and duodenum is very enlightening. Plastic surgery of the nose, by New, liberally illustrated, indicates the improvement that can be produced in certain physiognomies. Adson's presentation for ramisection of spastic paralysis gives the technic for this special work he has so carefully perfected. There are other notable contributions.

# NORTHWEST MEDICINE

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## ORIGINAL CONTRIBUTIONS

### PSYCHIC FACTORS IN GENERAL MEDICAL DIAGNOSIS\*

LEWELLYS F. BARKER, M.D.

BALTIMORE, MD.

#### WHAT MEDICAL DIAGNOSIS IS

By diagnosis we mean a thorough knowledge of the human being that we study. Diagnosis is, therefore, an ideal that we attempt to approach, the acquisition of complete knowledge regarding any living organism being beyond our powers. More particularly, in medical diagnosis we strive to ascertain in how far a given human being is healthy or ill and the reasons therefor, by which in turn we mean in how far he is, as a whole and in each of his parts, capable or incapable of making adequate responses to the physical and psychical influences of the environment in which he lives and the causes of the responsivity or the irresponsivity met with. Adequacy of responsivity indicates health, whereas inadequacy of responsivity indicates disease or anomaly. Health and disease are complexly conditioned; it is the task of diagnosis to determine the conditioning in given instances.

#### WHAT WE MEAN BY PSYCHIC FACTORS

Human beings are extremely complex living organisms that result from the interplay of surround-

ings with fertilized egg cells. Their potentialities of structure and function lie in the germ cells in which they start. Which of the potentialities come to actual development depends, as biologists now agree, upon the influences that act upon the germ cells and their derivatives during intrauterine and postnatal life.

The functional activities of human beings are usually subdivided into somatic and psychic, though it is by no means easy sharply to separate the one set of functions from the other. Without entering into any discussion of this topic, I shall here class as "psychic" not only everything that occurs in consciousness, but also all those functions that, occurring unconsciously, may in other circumstances become conscious. I shall deal, then, with the significance of the conscious (or potentially conscious) phenomena discoverable in studies directed toward the determination of the degree of adequacy or inadequacy, of responsivity of human constitutions to environmental influences. In how far are these psychic factors (conscious or unconscious) of importance for medical diagnosis, that is to say, for the determination of the existence of healthy states on the one hand, or of anomalous or diseased states on the other?

It would seem that in man, as in the higher animals generally, the psychic functions have evolved from the simpler instinctive tendencies. In each instinctive tendency three constituents are discernible: (1) a knowing or cognitive constituent, (2)

\*Read before the Fourth Annual Meeting of Pacific Northwest Medical Association, Portland, Ore., June 29-July 1, 1925.

a feeling or affective constituent and (3) a striving or conative constituent. The sum total of the human psychisms pertaining to knowing we speak of as *cognition* and *intellect*, of those pertaining to feelings and emotions as *affectivity*, and of those pertaining to striving as *will* or *conation*. A human personality is, then, a complex of cognition, affectivity and conation; the two latter are often considered together as composing character (as contrasted with cognition and intellect). The intellect seems to be an instrument that has been evolved in the interest of character; in other words, in order better to satisfy our desires by our activities, it has become necessary increasingly to know.

Adequate responsivity of a human being to physical and social pressures in a changing environment depends, then, upon suitable cognitive, affective and conative functioning. Obviously, therefore, for good medical diagnosis, that is to say, for satisfactory recognition of adequacy or inadequacy of responsivity in the persons physicians study, ability to investigate the psychic functions, upon which responsivity and irresponsivity largely depend, would seem to be indispensable. And similarly therapy, the task of which is to endeavor to make irresponsive organisms more adequately responsive, can scarcely hope to be successful if, concentrating upon physical defects alone, it fail to give attention to the psychic factors of adjustment. Both soma and psyche require accurate and painstaking investigation in medical diagnosis and adequate attention in medical therapy. He who would be a skillful diagnostician or an expert therapist dare not neglect either the somatic or the psychic deviations from normal functioning.

#### THE COGNITIVE AND INTELLECTUAL FUNCTIONS AND MEDICAL DIAGNOSIS

Comprehensively to deal with the cognitive, affective and conative factors that are important for general medical diagnosis would require the writing of a large treatise; in an hour's talk, one must be content merely to sketch the topic in broad outlines.

Cognition depends upon the ability to receive impressions from the external world through sense-organs, to conduct these impressions through peripheral nerves to central nervous organs, to combine these impressions with one another and with revived impressions of previous experiences, and to form perceptions and judgments that are consonant with objective reality. In other words, intellectual functioning in an adequately responsive person presupposes the integrity of the organs of sense, of the centripetal nerves, of their conduction paths and

terminal stations within the nerve centers, and of the associative mechanisms that combine the activities of the central stations with one another. Sense-stimulation, conduction of centripetal influences, perception, memory revival, association of ideas—all are parts of the process of knowing. Disorders of sensation, of conduction, of attention, of perception, of memory or of association limit or distort the data upon which identification, orientation, imagination, reasoning and judgment depend. Eyes, ears, nose, taste buds, touch spots, pain spots, and temperature spots in the skin, as well as the sensory nerve beginnings in the muscles, bones, joints and viscera must be intact, if sensory stimuli are to start the centripetal impulses that are necessary or desirable for orientation, for the gaining of knowledge of the world outside or for warnings of abnormal processes going on inside the body.

A school boy may appear to be stupid because of a severe hyperoptic astigmatism; a tendency to isolation may be traceable to the embarrassment of bilateral labyrinthine deafness; a sensation of pain may be the first warning of the onset of a pleurisy, an appendicitis or an attack of gout. Or, again, if conduction be interfered with in peripheral nerves, in the spinal cord, or in the brain, anesthetics or hypoesthesias of corresponding distribution will be demonstrable. Thus, vision may become defective because of an optic neuritis; a bladder may become distended because a patient with tabetic degeneration in the spinal cord may not have the normal sensation that accompanies overfilling; numbness in the fingers and toes may be the first intimation of the cord changes, accompanying or preceding the development of a pernicious anemia; or complete loss of sensation of one half of the body may point to a destructive lesion of the posterior part of the occipital limb of the internal capsule.

Irritations of sensory conduction paths may excite remarkable psychic reactions in the form of sensations of pain, for example, the neuralgias of peripheral nerve origin (like sciatica, lumbago and tic douloureux) or the lightning pains of tabes, due to irritations of the posterior roots of the spinal nerves and their intramedullary continuations. Many of the common complaints for which patients consult physicians consist of subjective sensations, due to irritations of sense organs or of sensory conduction paths. In addition to the neuralgias just referred to I need mention only headaches, dizziness, sore throat, otalgia, palpitation, angina pectoris, stitch in the side, epigastralgia, nausea, hunger pain, colics,

tenderness, dysmenorrhea, arthralgias, osteoscopic pains and myalgias, all of which are psychic reactions to mechanical or chemical stimulations of nerves. In this domain, especially, every general and every special practitioner of medicine has learned to evaluate psychic factors for diagnosis.

Disturbances of sense perception and identification are also common in general medical experience. Since normal perception depends upon the fusion of sensations with revived memories of similar sensations previously experienced, disturbances here may have their cause in abnormal sensation, in faulty memory, or in imperfect assimilation of sensation to revived experience. Here belong, on the one hand, the sense deceptions that we know as hallucinations and illusions, and, on the other, the sensory aphasias and agnosias. You will all recall alcoholics (in post-Volstead as well as in pre-Volstead days) who saw many small black moving objects where you could see none. You may have heard schizophrenics give reports of the visions they saw and the voices they heard, though healthy persons present failed to corroborate the occurrence of such sights or sounds; or you may have noticed with alarm the illusion of the paranoiac who interpreted some harmless sound as a threat. Failure to recognize or to identify perceptions (though sensation may be impaired) is a peculiar psychic disturbance, sometimes spoken of as mental anesthesia. If the failure of recognition has to deal with symbolic things, like words, figures, musical notes or gestures, it is called sensory aphasia, of which inability to read (alexia) and inability to recognize the meaning of words heard (word deafness) are well-known examples; but if the failure of identification be of nonsymbolic things, it is called sensory asymbolia or agnosia (visual, acoustic or tactile). These psychic disturbances are nearly always due to severe organic lesions—vascular, neoplastic or inflammatory. The sensory aphasias and the agnosias just referred to are in part memory defects, due to injury or destruction of local areas, in which certain memory traces (engrams) are stored. We distinguish these partial amnesias from the more general amnesias (or losses of memory) and paramnesias (or perversions of memory).

In general amnesia all memories both old and recent may be impaired. Thus, in advanced arteriosclerosis of the cerebral arteries or in destructive processes of the cerebral cortex such as occur in dementia paralytica, there may be inability to recall either the experiences of earlier or of later life. When school memories can be easily revived but

recent events cannot be remembered, the memory difficulty may be due to loss of the ability to increase or supplement the store of memories (so-called "recording faculty") and this incapacity may in turn depend upon a disorder of attention, either an inability to direct the thought to a definite task (hypovigility), or an inability to maintain this direction in the presence of intercurrent stimuli (hypotenacity).

Among the paramnesias, or perversions of memory, may be mentioned those peculiar states in which patients describe wholly imaginary events as though they were memories of actual experiences; here belong the *confabulations* of hysterical patients and the *pseudoreminiscences* of persons suffering from the polyneuritic psychosis of Korsakoff. Not far removed from these disturbances are the *pathologic lying* exhibited by certain degenerates, and the *pseudologia fantastica* of certain egoistic psychopaths who give free rein to their fancies in the concoction and relation of dramatic tales of their alleged experiences.

Disturbances of association and of thought are much more abstruse phenomena than those hitherto considered, for the normal associative processes and normal intelligence are the most complex functions that occur anywhere in nature. I shall not attempt to discuss them at length but will mention merely a few of the more striking pathologic conditions of interest for general medical diagnosis. Associations are combinations and arrangements of psychisms (sensations, perceptions, revived memories) into larger units; they are essential parts of the processes of thinking, of imagining, and of judgment formation; they are the foundation of the "intelligence." Associations may be pathologically accelerated or retarded. A good example of such *acceleration* is to be observed in the *flight of ideas* and exaggerated *distractibility* of manic and hypomanic states. I have a hyperthyroid patient under observation just now, whose thoughts come so rapidly that, in trying to give expression to them, they (to use her own words) "stumble over one another." The opposite state, pathologic *slowing* of associations, is characteristic of many morbid depressions; you have all observed the slow labored talk and the apparent poverty of ideas of melancholics, psychomotor retardation.

Another disturbance of association is the appearance of *bizarre links* in a chain of thought, difficult for a normal person to understand. Thus, in dementia præcox the successive components of the expressed thoughts may be so peculiar as to puzzle

completely the examining physician as to their origin; they resemble the unintelligible associations that may occur in one's dreams. Every gradation may be met with from mild distortion to peculiar condensations, displacements and symbolisms.

It is probable that abnormalities of association are responsible, at least in part, for the origin of a variety of *pathologic ideas*, such as (1) the *imperative ideas* or obsessions, (2) the *exaggerated ideas* of hypochondriasis and of premonitions, and (3) the *true delusions*. Patients suffering from compulsion neurosis (psychasthenia) may be obsessed by thoughts that their hands are contaminated, that they will carry infections to others, or that they will injure someone with a sharp instrument. They realize fully that these thoughts are absurd but, nevertheless, they constantly recur and annoy them. Combined with various phobias with pathologic impulsions, with indecision, and with feelings of unreality, the patients on whom they intrude may be severely tortured by such imperative ideas. The exaggerated ideas that occur in hypochondriacs and in those who experience "premonitions" are not recognized, by those who harbor them, as intruders in consciousness or as being absurd; on the contrary, they look upon them as true expressions of their inner personality. Such exaggerated ideas stand very close to the pathologic ideas that we designate as true delusions. A delusion differs from an error in that the latter may be corrected by a new and enlightening experience, whereas the former is created by an inner emotional need, not by an accidental fault of logic, and is likely to persist as long as the abnormal emotional state that gives rise to it persists, despite all efforts to correct it by instruction or by enlargement of experience. No one can convince the patient that the delusion is a false idea, for he completely lacks what is called "disease-insight." In melancholic states, *delusions of unworthiness, of sin, and of poverty* are dominant; in manic states *delusions of power and of grandeur* are characteristic; and in paranoid states *ideas of reference* and *delusions of persecution* are unmistakable symptoms. In all these delusions the disturbances are affective as well as cognitive; they are determined as much by feeling-tone and emotion as by abnormalities of the associative processes.

#### THE AFFECTIVE FUNCTIONS AND MEDICAL DIAGNOSIS

When we turn to the affective functions we enter a domain of the very greatest importance for general medical diagnosis, since, on the one hand, nearly all diseased states of the body cause some disturbance

of the feeling of well-being and, on the other, the disturbances of affectivity in certain disorders that are primarily nervous or mental may mislead practitioners who are not sufficiently familiar with them to suspect the existence of diseases of the heart, of the gastrointestinal tract or of other special domains of the soma. By the affective functions (or *affectivity*) we understand the psychic phenomena known as the feeling-tones, the moods and the emotions. Every cognitive psychism, be it a sensation or an idea, is accompanied by a positive or a negative feeling-tone; that is to say, it is tinged by pleasure or displeasure. Every one knows, too, what is meant by moods—more or less prolonged states of "sunniness" or of "blueness." And the episodic emotional states of delight or of disgust, of joy or of grief, of love or of hatred, of anxiety or of peace, of satisfaction or of dissatisfaction, of anger or of humility, of fear or of courage, and so on through the whole gamut of the emotions are also familiar to each of us. No two persons exhibit precisely the same affective reactions and the affectivity of a single person may fluctuate greatly at different times and seasons. What we call *character, temperament* and *disposition* are largely determined by affectivity. The strength and depth of the *ethical* affects account for the difference between a good and a bad character. A person of *sanguine temperament* exhibits labile affects, whereas another of *phlegmatic temperament* manifests steadier and sometimes deeper feeling and emotion. Similarly, *irritability* or *placidity of disposition* are terms indicative of affective tendencies due either to constitution or to situation. Nothing in another person influences us as much as the affective states that he exhibits; we feel them and instinctively react to them; they are largely regulative of our social relationships. Moreover, thought and behavior are markedly dependent upon desires and moods, for *intellect and will work at the behest of the affects*; it is natural for every one to try to satisfy his desires, to gain pleasures and to avoid discomforts. Thus the attitude assumed by the person as a whole is an expression of the affective states he experiences. And the latter appear to depend in large part upon neuroendocrine make-up and the ways in which the neuroendocrine apparatus reacts to the internal and the external environment.

In our patients we meet with the most remarkable *disturbances in the domain of the affects*—pathologic intensification, pathologic protraction, pathologic irradiation and displacement. The outspoken disturbances are familiar to every layman as well as

to every practitioner. In the *melancholic patient* we observe every gradation from marked "down-heartedness" to the deepest sadness and gloom; he suffers continual mental torture, so severe that he often prefers to die rather than to live; he has lost all interest in persons and in things except in his suffering; he harbors ideas of self-depreciation, of self-blame, of poverty and of sin; he thinks and moves slowly; his attitude is stooped; the angles of his mouth hang down, and his skin is wrinkled and desiccated so that he looks older than his years.

In the *manic patient* we observe the affective opposite, namely every gradation of euphoria from simple preternatural cheerfulness and enjoyment of the world and of life to highly pathologic excitement and elation; he is excessively happy, interested in everything, but very distractable, turning from one object of interest to another with great rapidity because of the superficiality and acceleration of his associations. Nothing is an effort for him, he feels no fatigue, and he accordingly manifests outspoken pressure of activity; his ideas are expansive and grandiose; he feels superior, indeed greatly overestimates his own value and position and makes claims that sometimes bring him into violent conflicts with those about him; he is prone to be erotic and venturesome; his thoughts, his speech and his movements are accentuated; he stands erect with smiling face, glistening eyes and aggressive attitude and his skin is smooth and turgid so that he looks younger than his years.

These two contrasting syndromes of pathologic activity—the melancholic and manic—are met with in their purest forms in the manic-depressive psychosis, where one may alternate with the other. Milder cyclothymic states are, however, very frequent and their true nature often goes unrecognized. In my opinion, many of the patients who suffer from recurrent nervous breakdowns, spoken of as recurrent neurasthenia or recurrent psychoneurotic state, really belong in this group, for if the family history be investigated a family tendency to elation-depression syndromes or to suicides will often be discovered. Many of these patients with milder symptoms in their depressed periods seek relief from their discomforts by consulting internists, surgeons and medical and surgical specialists rather than neurologists or psychiatrists, and submit themselves to all sorts of therapeutic regimes in the hope of relieving what they call their "toxic condition." Particularly in hypochondriacal depressions has this been true. With the best intentions appendices, tonsils and teeth are removed, gallbladders are ex-

cised, supposed ureteral strictures are dilated, sphincters are stretched, nasal operations are performed, antra are washed out, high colonic irrigations are given, hysterectomies are performed, autogenous vaccines are prepared and administered, foreign proteins are injected, orthopedic appliances are adjusted, special diets are ordered, uniglandular and multiglandular endocrine products are fed, hydrotherapy, mechanotherapy, climatotherapy and radiotherapy are tried—all without avail. In time the depression runs its course, the inhibition symptoms disappear and are succeeded by normal affectivity or by mild elation; the patient becomes "well," whether at the time of change he be in the hands of a regular practitioner or of a quack. Whoever happens to be in attendance upon him when the change occurs may be accredited with the "cure," though sometimes the patient will attribute the "cure" to some special measure that he himself has thought of and applied just precedent to the change!

The affective states of elation and of depression are by no means confined to the groups of patients just mentioned; they are sometimes met with as episodes in other disorders, notably in schizophrenia and in organic psychoses like dementia paralytica. Great care should, therefore, be taken to make a thorough study of each case before deciding upon its nosologic position and relationships.

Time will not permit of further discussion of disorders of affectivity. I shall, therefore, only refer without comment to the *pathologic irritability* met with in manics, in epileptics, in paralytics and in imbeciles, to the *apathy*, the *negativism* and the *affective ambivalence* so often observed in schizophrenics, and to the *affective defects and perversions* encountered in psychoneurotics, in psychopathic personalities, in juvenile offenders and delinquents and in criminals.

#### THE CONATIVE FUNCTIONS AND MEDICAL DIAGNOSIS

Thus far I have dealt chiefly with two main psychic functions, "thinking" and "feeling," that is to say, with the cognitive and affective activities. It is now time to refer, if but briefly, to the third main psychic function, "striving," that is to say, to the conative functions. Here we have to deal with the relations of human volition (or "will") and human action ("behavior") to medical diagnosis; in other words, in how far can a study of a man's decisions and of a man's conduct be useful in evaluating adequacy or inadequacy of responsivity, which we have agreed to regard as criteria of healthy and of diseased or anomalous states?

Normal human organisms strive to attain certain goals. Among their aims are self-preservation, race continuation, the acquisition and dissemination of knowledge, social intercourse with their fellows, the creation and the appreciation of beauty, and "right" conduct. They have the "will to live," the "will to power," the "will to propagate," the "will to work," the "will to play," the "will to associate," and still other "wills." Nutritive impulses, activity impulses, sexual impulses, social impulses, esthetic impulses and ethical impulses are present in all healthy persons. In a theoretically normal life, a life of adequate responsiveness, all of these strivings would be represented in a balanced way. In actual life this ideal is rarely, if ever, closely approximated. And among our patients we meet with the most diverse deviations from normally balanced strivings; we encounter manifold defects, exaggerations and perversions of those strivings. Even in healthy persons the existence of multiple impulses necessitates what we call "choice"; when one impulse is favored, others must temporarily be suppressed. "Choice" or "decision" involves the whole personality, though it depends chiefly upon the existing state of affectivity; an action appears when one or another impulse has attained to domination. As Bleuler says, "We do what we wish, because we wish what we do." And our doing and our wishing appear to be the functional resultants of the interaction of our inherited equipment with a long series of influences (substances and forces) in our environment.

If this view be correct, two corollaries are obvious: (1) Fully to understand the behavior of a human being presupposes a complete knowledge of his heredity and of his environment and of the interactions between the two; and (2) a knowledge of the behavior of a human being should throw light upon the structure and functions of his body and mind, and should give clues to the recognition of the inherited and the environmental influences upon which these depend. Obviously, then, the study of the conative functions (the wishes, the decisions and the acts) of patients and their conditionings must be of great importance for the higher forms of medical diagnosis. That is why internists and neuropsychiatrists especially lay such great stress upon the anamnesis and inquire fully into hereditary predispositions and prenatal and postnatal environmental situations. Dietary experiences, sexual experiences, education, economic struggles, work and recreation, esthetic experiences, ethical attitudes and mental conflicts—all may be of importance. And

the history of the behavior of the person through all these experiences together with his behavior when under the physician's observation will, taken with the facts in the family history, yield the data upon which medical judgment regarding the "springs" of behavior must be based.

The science of human behavior is as yet but in its beginnings but modern neurology and psychiatry are making valiant contributions to it. The study of the *decisions* and of the *acts* of psychoneurotics, of psychotics, of delinquents and of criminals has not only been of great help in the medical diagnosis of abnormal mental states, but has already thrown much light upon the psychologic processes of healthy people. No physician, familiar with the motor aphasia and apraxias of organic brain diseases, the indecision of psychasthenics, the conative conflicts of psychoneurotics, the facilitated conduct of manics, the inhibited behavior of melancholics, the stereotyped movements and attitudes, the command-automatisms, the grimaces and the mannerisms of schizophrenics, the sex-perversions and other behavior-anomalies of psychopathic personalities, the restricted aims and achievements of oligophrenics, and the antisocial acts of criminals and delinquents, will be likely to deny the significance of studies of the conative functions for the understanding of the patients with whose welfare he is entrusted. Such studies are most valuable, too, because of their influences on the physician's own total view of life, for who more than the practitioner of medicine needs to be tolerant of the vagaries of human behavior or to possess the insight that will enable him to understand and to explain the weak or the perverse "will."

If your patience were not already exhausted, I should be tempted to discuss certain disturbances of the personality as a whole (e.g., alternating personality, splittings of the personality, disintegration of the personality and depersonalization), as well as certain disturbances of the consciousness as a whole (e.g., sleep disorders, hypnosis, coma, stupor, twilight states and deliria) and their relations to medical diagnosis. But I forbear. I hope that the matters already presented may suffice to convince practitioners of the importance of investigating psychic as well as physical factors in their patients, when they wish to make comprehensive diagnostic studies. And if regular practitioners paid more attention to these psychic anomalies and psychic symptoms of their patient, the field of the christian scientist, of the chiropractor and of the irregular generally would be greatly proscribed.

## THE TOXIC GOITERS OF THE ADOLESCENT AGE\*

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Goiter is more prevalent during the adolescent age than at any other age during life. In a partial survey made in the public schools in Portland it would seem that approximately 60 per cent of the girls and 30 per cent of the boys have a goiter during this period. In the Goiter Clinic of the University of Oregon Medical School, we use the following classifications of adolescent goiter:

- I. Simple Goiter
  - A. Colloid
  - B. Hyperplastic
    1. Diffuse
    2. Localized
- II. Toxic Goiter
  - A. Toxic hyperplastic adolescent
    1. Diffuse
    2. Localized
  - B. Toxic hyperplastic (exophthalmic)
  - C. Toxic adenomas
- III. Tumors
  - A. Adenoma
  - B. Sarcoma

We have seen none of the other varieties of goiter in the adolescent age.

An understanding of the various types of adolescent goiters necessitates a brief review of the anatomy and physiology.

*Anatomy.* The thyroid gland is made up of acini, supported by a thin interstitial structure containing connective tissue, blood vessels, lymph channels, interstitial cells of Wolfler, and nerves. The acini differ from the acini of other glands in two essentials: first, they have no ducts through which to discharge their secretion; and second, they are normally distended with a homogenous material, colloid.

*Physiology.* The cells lining the acini secrete two substances: first, the active principle, termed by Kendall thyroxin, a substance probably needed by every cell in the body and the secretion of which may be measured in terms of heat output or oxygen consumption; second, the colloid, an inert, homogenous substance, the purpose of which is to hold the thyroxin in suspension until needed.

Due to the rapid changes incident to the adolescent period, there is an increase in the demand thrown upon the thyroid gland as well as upon the other important organs of the body. Owing to an iodine deficiency in the food and water intake in many sections of the world, and probably also to a variability, first, in the absorption of iodine from the intestinal tract; and, second, in its utilization by the thyroid, the thyroid, which previous to the adolescent period was able to meet the demand placed upon it, now becomes deficient.

This deficiency is ordinarily manifest in one of two ways: (1) by an oversecretion of colloid in the attempt to secrete a sufficient amount of thyroxin, which results in a distension of the acini, increasing the size of the gland, and is known as colloid goiter; and (2) by an increase in the size and number of the epithelial cells in order that there may be a greater secretion of thyroxin. This condition we call the hyperplastic goiter of the adolescent age. It does not differ greatly in the gross or microscopic appearance from the hyperplastic goiter of the adult, except that frequently there are localized areas of hyperplasia, simulating an adenoma but differing from it in that it has no capsule and microscopically it resembles the hyperplastic type of goiter and not the adenomatous type, in which there is an increase in the number of acini. The former condition we designate as diffuse hyperplastic adolescent goiter and the latter localized hyperplastic adolescent goiter.

While in the majority of the cases of adolescent hyperplastic goiter there is no evidence of hyperthyroidism, in many there is such evidence. Pathologically these cases do not differ from the non-toxic hyperplastic adolescent goiter, but they must be grouped separately because of the clinical manifestations.

Colloid goiter is the most frequent type of goiter occurring in the adolescent age. Other than the presence of goiter there are no symptoms. It is easily preventable by the administration of iodine and easily curable by the judicious use of desiccated thyroid. It has been our experience that iodine is of great prophylactic value, but of almost no curative value. This statement is based upon a series of cases studied over a period of from six months to two years, in which the patients were seen at intervals of two weeks, the neck measured, the pulse counted, and the general physical condition observed.

\* Read before Meeting of American Society for the Study of Goiter, Atlantic City, N. J., May 25, 1925.

The remainder of this paper is based upon a study made by Dr. Peden for his senior surgical thesis. One hundred seven consecutive cases of adolescent goiter were studied. Of this group fifteen were classified as toxic hyperplastic adolescent goiters, one as toxic adenoma and two as toxic hyperplastic goiter (exophthalmic).

As the material for this study comes largely through patients sent to the clinic by nurses or brought by anxious parents, this group of cases must not be considered as a representative group of patients with adolescent goiter. Toxic goiter does not exist in such percentage as is found in this group. These are the patients who have come for treatment, many of them being sent by the school nurses, because they have symptoms of hyperthyroidism, while the patients without such symptoms are, for the most part, going without treatment.

The simple diffuse hyperplastic adolescent goiter shows no symptoms or signs other than the enlargement of the thyroid gland. The gland is moderately enlarged, is fairly firm in consistency, being firmer than the colloid goiter except when the latter develops rapidly. The upper poles are usually fairly sharp.

The simple localized hyperplastic adolescent goiter differs from the diffuse hyperplastic type in that, while there is usually some increase in firmness of the gland, there are definite nodules. These nodules simulate adenomas, but differ from them in not being as definite, and disappearing under proper treatment. That this condition exists as a definite pathologic entity we are certain because of an error in diagnosis a few years ago, resulting in the removal of such a nodule. Since that time we have studied the patients of this age with nodular necks carefully.

While we have seen a few adenomas, the majority of them have been of the localized hyperplastic type of goiter, as proven by the complete disappearance with desiccated thyroid. Adenomas will decrease in size under desiccated thyroid, if there is a considerable amount of colloid within the adenoma. The tumor does not, however, completely disappear. In fact, in many cases, while there is a decrease in the size of the adenoma, the tumor is even more perceptible because of a corresponding decrease in the size of the thyroid gland, due to a reduction of its colloid content under desiccated thyroid.

The toxic hyperplastic goiter of both the diffuse and localized varieties does not differ from the simple hyperplastic adolescent goiters pathologically. Clinically, however, the former group presents definite manifestations, while the latter group has no symptoms derived from hyperthyroid function. The toxic symptoms of the former are transitory. At times the patients are perfectly normal except for the thyroid enlargement. At other times they complain of tachycardia, palpitation, nervousness, tiring easily, and often there is some difficulty in concentration upon their school work. During these times the appetite may be variable. The patients sometimes lose in weight. The pulse is rapid, tremor present, and the blood pressure usually below the average.

The basal metabolic rate is increased during the period of hyperthyroidism. In the fifteen patients belonging to this group the highest rate was plus 54.7. There was one rate of plus 44.8, another of plus 43, another of plus 40, two of plus 34, one of plus 30, four between plus 20-30, and the rest plus 20 or below. Usually the rate remains up for a comparatively short time, if the patient's activity can be controlled. The giving of desiccated thyroid while the rate is up increases the rate, but after the basal metabolic rate has returned to normal the giving of desiccated thyroid carefully controlled usually does not increase the rate, nor cause a return of symptoms, but results in the diminishing of the size of the gland.

There is no apparent difference between the diffuse hyperplasia and the localized hyperplasia, clinically or in the relationship to treatment. The following case history serves as an illustration of this type of toxic goiter.

Patient, female, age 14. Chief complaint: Goiter, nervousness, sweating, palpitation, nausea, loss of appetite, sense of pressure in the neck.

Previous illness: Measles, whooping cough, scarlet fever, influenza.

Family history: Negative.

Present illness: First noticed goiter about four months before seen.

Physical examination: Fairly well nourished girl, pulse 112 and regular. Eyes react to light and accommodation, with no evidence of exophthalmus. Tonsils have been removed. Neck: Cervical glands palpable both sides. Thyroid: Diffuse enlargement of both lobes and the isthmus, with a nodule about 2.5 cm. in diameter in the right lobe. Lungs: Negative. Heart: Negative. Abdomen: Negative. No tremor. Skin: Moist. The basal metabolic rate at the time of the examination was plus 34.

No treatment was given at this time. The patient was advised to reduce activities to the minimum and permitted to continue attending school. Basal metabolic rate two months later plus 12. Four months later plus 8; one week after former, at time of men-

struation, plus 15; nine and a half months after first seen plus 5. Eleven months after first observation, patient returned to clinic for observation, at which time the thyroid gland was found to be normal.

Diagnosis: Adolescent hyperplastic goiter with localized nodule, transitorily toxic when first seen.

Results: Cured, providing patient continues to take preventive dose of iodine.

**Adenoma.** In this series of cases, only one toxic adenoma was found. There have, however, been more adenomas seen in the clinic during the adolescent age, and have for the most part been nontoxic. The one in this series serves as an illustration of the toxic adenoma.

Patient: Female, age 14. Chief complaint: Goiter, nervousness, tachycardia, palpitation.

Family history: Mother was operated on in this clinic for toxic adenoma.

Present illness: The goiter was first noticed at the age of 11. There had been a history of symptoms suggestive of hyperthyroidism since the age of 10. At the present time she is nervous, sweats easily, faints frequently, tires easily. Appetite is good, is nauseated and vomits occasionally; has tachycardia, and palpitation frequently.

Physical examination: Somewhat slender, fair height, undernourished. The thyroid diffusely enlarged, with a definite palpable nodule in the lower right lobe. Tremor present. No abnormal eye signs. Basal metabolic rate January 5, 1923, plus 37; February 27, 1923, plus 62; March 2, 1923, plus 10; May 26, 1923, plus 42.

Diagnosis: Toxic adenoma.

Treatment: Patient was operated upon August 1, 1923, when a definite encapsulated nodule was found and removed, following which she made an uneventful recovery, and since which time has been practically normal.

**Exophthalmic goiter:** In two patients a diagnosis of exophthalmic goiter was made. While exophthalmic goiter in the adolescent age is uncommon, we have seen it in private practice as early as eight years of age.

In this group there were no tumors other than the adenoma. In private practice, however, a sarcoma has been seen during the adolescent period.

Treatment: The treatment of toxic goiter of the adolescent age like the nontoxic is primarily prophylactic. In none of the patients seen, presenting the evidence of toxic goiter, was there a history of taking iodine in prophylactic doses before the development of goiter. Some of them had taken iodine after the development of goiter, and the symptoms we believe are in some directly traceable to the effect of the iodine. We believe that, had the patients been given iodine from early childhood, the probabilities are there would have been no goiter to have become toxic.

Treatment of nontoxic goiter. Nontoxic goiters are treated in our clinic with desiccated thyroid. We begin with one grain three times daily. The

patients are required to report at intervals of two weeks for observation. Patients not yielding to one grain three times a day and not showing any evidence of hyperthyroidism are given more. The majority of the patients are cured within three months. When the gland returns to normal, the patients are put on one grain of desiccated thyroid daily for one month, and then given either a grain of sodium iodide once a week or an iodostarine tablet once a week, or advised to use the iodized salt, and instructed to report back to the clinic every six months.

While it is too early to draw final conclusions, to the present we have seen very few recurrences in the cases thus treated and pronounced cured. There are a few cases diagnosed as simple hyperplastic adolescent goiters that have become toxic when given desiccated thyroid, but they have all cleared up when it was discontinued. The toxic hyperplastic adolescent goiters are treated according to the intensity of the symptoms. The more severe cases are put at rest in bed. The milder cases have their activities limited and for the most part permitted to attend school. In this way the majority of them become nontoxic. They are then put on small doses of desiccated thyroid, which we find does not cause a return of symptoms if carefully controlled. The thyroid gland decreases in size, and upon its returning to normal the patients are put on iodine as a preventive measure.

The toxic hyperplastic exophthalmic goiter should be operated upon in the adolescent the same as in the adult. The same care should be used in preparing the patient and the same type of operation should be followed. With proper preoperative care and with preliminary ligations where indicated, these patients respond well to operative procedure.

While the majority of the adenomas seen in the adolescent age are not toxic, we believe that all adenomas become toxic in the course of time, and therefore advise their removal.

*Conclusions.* Toxic goiter exists in the adolescent age in three forms: (1) Toxic hyperplastic adolescent goiter, which exists both as the diffuse and localized varieties, (2) adenoma, (3) toxic hyperplastic exophthalmic goiter. The former is the most common and if properly treated does not require operation. If improperly treated, permanent hyperplastic goiter may develop.

Adenoma and toxic hyperplastic exophthalmic goiters are not common but do occur and require surgical procedure.

EXOPHTHALMIC GOITER\*  
ITS ETIOLOGY AND MENTAL SYMPTOMS

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The most surprising fact to a student of psychiatry is the fact that competent medical men are so prone to ignore the role of the mind in the cause of various so-called physical diseases. In their constant search for a cause the parasitic theory always leads in importance. Grave's disease has also been thought of from this view point, and it was many years after the grouping of the symptoms by Basedow and Graves before it was placed in the group now conceded to be of nervous origin.

Many years after the role of endocrines in the cause of nervous and trophic diseases was discovered, Cannon advanced the theory of emotions causing a physiologic activity of certain of these small glandular structures, and by painstaking experiments established for all time the relation of the mechanism of fear to the suprarenals. He furthermore proved to his own satisfaction that the sympathetic nervous system bore a direct relation to the emotions and also to control of the supply of the secretions of the adrenalin. Relying on laboratory experiments alone, he could not go much farther, so he turned his attention to the study of individuals who had been subjected to extreme fear and fright. He learned from these first hand that everyone suffers from fear and for that reason some become cowards in the face of danger and run. Some instead of running will stand their ground and meet the danger, but that at the same time the suprarenals, not being under voluntary control, would invariably pour out an excess of secretion in both cases.

Crile, in association with Cannon, has gone further into the study of these relations and together they have established a proof that the cervical sympathetic system is stimulated directly by the emotions, and that indirectly the sympathetic system stimulates the suprarenals to activity or hyperactivity, according to the strength of the impulses. Crile, a few years ago in his Cleveland clinics, established the knowledge that the thyroid was stimulated to activity by hormone action of the suprarenal secretion. More work followed and the result was an hypothesis that electric conductivity of the brain was increased, if an excess of iodine

were present in the peritoneum of certain animals, together with a temperature rise of several degrees.

Meyer, at the Marine Laboratory in Florida, found that the electrical conductivity of water was increased by the addition of iodine and at the same time a nerve, immersed in iodized water, also showed increased conductivity. If we accept the hypothesis of Nernst, which is now generally conceded to be true, namely, that the human organism is an electrochemic apparatus and that increased functional activity is synonymous with increased electrical activity, we are justified in affirming that iodine activity and thyroid activity produce the same result.

What information can we gain from all of the work done by these investigators? We can see at a glance that iodine introduced artificially increases bodily activity, nervous activity, and by taking into consideration the nerve cell metabolism in the brain being operative through this increased metabolism, also mental activity.

Crile in his last work on the function of the thyroid makes these pertinent comments: "It would appear that the study of the thyroid begins and ends with iodine. Marine states that simple goiters and the incidence of fetal adenomata result from a deficiency of iodine alone. On the other hand, goiters of the exophthalmic type are due to a hyperiodism and the hypersecretion of thyroiodine by the thyroid."

Again hear what Crile has to say: "We may then consider the function of the thyroid gland to be that of a controller of the electric conductivity of the brain; hence the controller of its sensitivity and of its activity; thus a controller of basal metabolism."

The merest tyro is aware that the suprarenals do not maintain a permanent control of blood pressure or vasomotor activity, but that its action is evanescent in character. Witness the fact that a hyperemia can only be reduced temporarily by the use of a one to one thousand per cent solution, dropped on the inflamed conjunctiva.

If the mission of the adrenals is to stimulate action, mental as well as physical, and the thyroid plays the role of second fiddle in the process, how can we have a permanent disease entity known as exophthalmic goiter? One would think, on the face of the evidence presented, that the condition could only be transient, but we know that the trouble is very permanent and persistent and that

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there have been cases showing a duration of many years.

We owe Crile a debt of gratitude for the service he has rendered the medical profession in the truths he has given us about the function of the thyroid, to say nothing of his theory of shock. More of his work has given us the proof that the suprarenals stimulate the thyroid and the thyroid in turn stimulates the adrenals, and the adrenals by reverse stimulation in their turn activate the thyroid, thus producing a cycle which has no beginning and no end, as long as the breath of life is present in the human. When we are in perfect health, the glands reciprocate with each other so perfectly that we have all the energy we need and all the activity we desire without being aware of fatigue of brain or brawn.

Excessive fright or excessive flight, each causes hyperfunction of the thyroid. The moment flight is discontinued the thyroid begins readjustment and it is only a matter of a rest for a few hours until the excess of iodine is metabolized in the body and no permanent result is evidenced. I am not so sure about the end-results of fright.

As distasteful as the subject may be to the general medical man, I am compelled to force Freud and some of his much maligned psychoanalysis upon you. It was he who first introduced to the world the theory of repressions in psychoneuroses, and furnished proofs by analysis of dreams that we carry in our minds a mental quagmire which, when brought to the surface of our consciousness, not only astounds us, but makes us think that mankind is totally depraved.

I am a student of Freud and have successfully applied his methods in the cure of epilepsy and many of the psychoneuroses, and have proven that his theory of repressions of painful experiences is correct. Not only that, but his three contributions to the sex theory are basically true. I have treated a few cases of psychoneuroses with exophthalmic goiter associated, and in every case so treated I have found the invariable repression as responsible for not only the continuance of the symptoms but for the intensity of the same. Emotions such as fear and anger, not to mention the American disease anxiety, are the agitators of repressions and the repressions in their turn augment the worry and anxiety, so that a vicious circle is established which continues until the buried complex is removed by psychoanalysis.

You have been shown by Cannon that the suprarenals are stimulated to excessive activity by fear,

that hypersecretion of the adrenals increases thyroid activity, that hyperactivity of the thyroid increases iodine secretion, the product of the thyroid, that increased iodine supply in the body means increased physical and mental activity. If by overstimulation we increase the flow of iodine and this is caused by fear thoughts, is it any wonder that in time the engorgement produced by this hyperfunction will cause a physical dilation of the secreting cells first and finally the entire organ. With this expense of nervous energy it is just a question of time until the whole body economy is out of adjustment, with its tachycardia, dyspnea, exophthalmos, physical and mental fatigue from constant overstimulation.

It seems that I have made my point clear now that the physical symptoms and physical signs of goiter are the aftereffects of overstressed emotions, and that exophthalmic goiter is of psychogenic origin primarily and that the excessive secretion of iodine is the secondary cause of this condition.

Here is further proof of my contention. Nolan Lewis, neuropsychiatrist to St. Elizabeth's Hospital, Washington, D. C., has recorded the complete psychoanalysis of two cases of Grave's disease and in each case through the dreams traced fears and feelings of guilt for sexual indiscretions as the direct cause of the repressions present and indirectly responsible for the exophthalmic goiter. In the face of this evidence, we would not go far amiss in saying that emotional stresses are primarily responsible for the syndrome known as Basedow's disease.

#### MENTAL SYMPTOMS OF THE DISEASE

The remainder of this paper will be devoted to the mental symptoms of exophthalmic goiter. By this statement I do not mean in the sense of a frank psychosis, so much as to interpret the mental signs which often escape a casual observation. It will be necessary also to discuss psychotic symptoms, when we begin to determine the end-results of mental symptoms.

Bram, who has had an extended experience with Grave's disease, claims to have found psychopathic predisposition in ninety per cent of his cases. He asserts that he has also found epileptiform attacks associated with this disease and, despite surgical removal of the gland, the epileptoid signs still persisted. Surgical procedure yields temporary relief from mental symptoms in most cases, but in a few it only exaggerates the mental trouble.

Le Grand observed many cases of frank manic-depressive insanity associated with goiter in his clinics, and Kräplein makes similar reports from

his large and extended experience. Kapenburg reported that from his clinics in the Utrecht hospital, in a series of over five hundred cases, he found twenty per cent presenting some mental impairment.

Considering the role of iodine in the causation of this disease and with a previous knowledge that its peculiar faculty is to increase or speed up the mental faculties, we can readily foresee a trend toward increased excitability. The literature on iodine poisoning is rather scattered and noncommittal, and it seems, despite the fact that in this condition we have an acute iodine poisoning, very few writers have investigated the symptoms of such intoxication so as to shed much light on the subject.

Neurasthenia, from the broad sense and not from the restricted sense of Freud and his pupils, is a most constant syndrome associated with Basedow's disease. It is needless to call attention to the feeling of fatigue out of all proportion to the actual demonstrated fatigue that is experienced, or to tell you that this in itself often places the patient in such a state of mind as to cause him to believe himself incapable of walking a dozen steps. Under stress of fear and imminent danger these same patients have been known to practically run for blocks. This, then, is an obsession and has no foundation in fact. The next symptom is acute sense of hearing. A so-called neurasthenic can often hear the slightest noise and many are so sensitive to sound that they cannot stand the tick of a clock.

To follow the mental symptoms of most goiter cases, we have but to take stock of the dominant symptoms of neurasthenia. Who has not had a Grave's disease under care, but has been told about how the slam of a door would upset the patient's nerves for hours. All of us have been told by these patients, "I believe I am losing my mind. I don't seem to be able to think any more. I cannot stick to one idea but a fraction of a second, my mind rambles so. I am so sensitive to slights, when I never was that way before I had this growth in my neck." Others complain of being afraid to be left alone and insist that someone always be near. They often crave excitement and seem to be unable to control their hands or legs, keeping both in constant motion. The whole picture is that of irritability and constant activity. They will be talking to you in a regular manner, but with slight staccato and soon without any apparent reason change the subject to something wholly irrelevant. There are times when they will even become hilarious and make fun. I have known of one case who, during a serious attack, wrote a humorous poem.

Insomnia is always associated with this disease and the patients will often go for weeks with but a few hours sleep each night. This sleep is never restful. First, there is a constant dread of going to bed for fear that they will not sleep and at the same time they will say they are so sleepy they can hardly keep their eyes open. Most of them say they dread to go to bed because they always hear their heart pound so loudly that it frightens them and they are afraid they will die. Despite the fact that they are exhausted from loss of sleep, the minute they strike the bed their eyes fly open wide and the usual complaint is heard, "I never closed my eyes until nearly daylight."

As in neurasthenia, in the morning they awaken with a headache and complain that they feel as if they had been working at hard labor all night. Dread of fire, fear of darkness, fear to be left alone, fear of open places, fear of being closed in, with a feeling of suffocation, and the hearing of imaginary sounds, complete the picture of misery and anguish from which goiter victims suffer.

Like all conditions, there are a few who show but few of the above signs, but all goiter cases at some time or other show one or more of the definite symptoms of neurasthenia. Dreams have a part in this maddening rush toward frenzy and these contribute their quota of misery. Goiter patients during the active stage of the disease will dream of all forms of horrors and of such conditions as falling long distances and never striking, of hydra-headed monsters, of being at the North Pole and freezing to death. They also have nightmares which awaken them with a fright which will show after-effects for days. Psychoanalysis reveals these in every case and with great care one can reach a nucleus-complex which for a time at least will allay this troublesome state.

Old cases of great severity will often exaggerate all of the above symptoms to such an extent that there are often definite signs of amnesia for short periods. With the amnesia the signs of anxiety neurosis will likely be associated. Phobias, obsessions, compulsions and impulsions are not at all rare and I am sure that most of us have at some time or other found our patient in such a state of mind as to seem capable of committing some rash act. Irritability is always an associated symptom with Grave's disease, as it is with the anxiety neurosis. The symptoms to be found in this condition referable to the mind begin with the mildest form of excitement which is scarcely noticeable and run

the entire range of mental states through ecstasy, frenzy and mania.

Some observers have noticed phases in this disease in which the patient is dull, apathetic and listless, with a tendency to brooding and melancholia. Indifference to surroundings has often been noted by myself in these cases. A preoccupied air at some time in the disease is not unusual. Have we any interpretation for this opposite state? I think we have, for after any gland has functioned constantly above normal for many months it is reasonable to suppose that there will be an exhaustion of the secretion. I think it was Timme who first called attention to a dual condition in the thyroid and it is his belief that hyperfunction always leaves a hypofunction, and I am of the same opinion.

I believe the state of affairs shown when the patient carries the apathy, brooding or indifference is a positive indication of the cessation of the flow of the iodine, and indicates a state of paralysis produced in the gland by overactivity. It is also my belief that in every case of exophthalmic goiter of long duration we have both a hyper and hypofunction, for my observation has led me to this conclusion through the mental signs alone. Crile says excess iodine means excess activity both mental and physical, so it is logical to conclude that lack of iodine produces lack of activity both mental and physical.

Psychoses, while rather common in Grave's disease, are rarely seen by the general man, but those who have had the care of the insane entrusted to them have no doubt seen many cases. The gravity of the physical symptoms seems to have no direct bearing on the form of mental ones shown, strange to say, but often the severest types will evidence but a slight goiter with very little exophthalmos and vice versa.

### THYROID SURGERY\*

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There still exist many differences of opinion regarding the treatment of goiter. Purely medical measures, radiation therapy and even skillful neglect have all been advocated. Formerly thyroid surgery, especially that of exophthalmic goiter, entailed an excessive mortality. Today its mortality compares quite favorably with that following other operative procedures.

Without attempting to enter into a discussion of the merits of the nonsurgical agents employed, it may be said that in surgery we possess, not an ideal method of treatment for certain types of goiter but a treatment which, considering mortality and end-results, approaches more nearly the ideal than any other. This result can only be accomplished, if operative technic be made only one step, important though it be, in the handling of the patient. Correct diagnosis and medical treatment, both preoperative and postoperative, may often be determining factors in the outcome.

The classification given by Plummer is very useful and from it are enumerated the following thyroid diseases which may be treated surgically: (1) diffuse colloid goiter, (2) adenoma without hyperthyroidism, (3) adenoma with hyperthyroidism, (4) exophthalmic goiter, (5) thyroiditis, (6) malignancies. There may be present a mixed pathologic picture, such as colloid with adenomatosis. Visceral degenerations and cardiac involvement in various stages may be encountered. It is only by careful study and close cooperation with the internist that a proper knowledge of the sequence of procedures applicable can be obtained.

Not all enlargements of the thyroid call for surgery. The colloid goiter should very rarely be removed, unless associated with adenomata or, being large enough to cause pressure, it fails to respond to iodine therapy. The adenomata present an interesting problem and are differentiated into those without and those with hyperthyroidism.

The indications for operation in the nontoxic group are cosmetic reasons, pressure symptoms which may involve the trachea, recurrent laryngeal nerve or esophagus, the possibility of malignant degeneration, and the fact that the nontoxic adenomata are potentially toxic, many of them becoming toxic after years of nontoxicity. It is our practice to advise removal in practically all nodular goiters without hyperthyroidism. The operative mortality is very small and the results good.

Adenomata with hyperthyroidism may have a varying degree of intoxication and may have marked visceral changes. Here studies of renal and cardiac function, estimations of the basal metabolic rate and the general condition of the patient are absolutely indicated. Surgery is indicated in this class, unless the changes have progressed to the point where they cannot survive the operation. Preoperative treatment is of less value than in the exophthalmic group, but much may be accomplished by

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complete rest, forcing of fluid, high carbohydrate feeding, and full digitalization in those showing arrhythmia or decompensation. Preliminary ligation and the administration of iodine are here of little or no value and the latter may be harmful.

Exophthalmic goiter, though presenting many clinical similarities to adenoma with hyperthyroidism, and by some observers classed with them, must be considered separately. It is an error to believe that operative technic is of paramount importance. A skillful operation might easily result in a fatality, if it be performed during a crisis or without estimation of the severity of the disease or if full advantage be not taken of preoperative and postoperative therapy. Through the work of Plummer and others we are now able to bring these cases into the best possible condition before subjecting them to thyroidectomy.

A period of rest with administration of fluids, digitalis when indicated, high carbohydrate diet, and the use of iodine in the form of Lugol's solution m. v-x, t.i.d., are often of great value and result in a marked improvement. Larger doses of iodine may be useful during a crisis. The results from iodine are transient but may change an inoperable, exophthalmic goiter into a milder case which can be safely operated on. Repeated observations of the basal metabolic rate give much information regarding the severity and operability of the case. Preliminary ligations of one or more thyroid vessels, usually the superior thyroid artery, may be of value not only as a therapeutic measure but also as a guide to the reaction which may be expected from thyroidectomy. Since using Lugol's solution as a routine in the preoperative treatment of exophthalmic goiters, we have found it necessary to do fewer preliminary ligations. While we have not followed Crile's methods in dealing with these patients, it has been shown that they should be guarded against psychic trauma during the entire period of management. Every effort is made not to make them unduly apprehensive.

A point in connection with the severely toxic cases of either exophthalmic or adenomatous origin is the question of seasonal influence upon the operative mortality. It is well recognized that the majority of severe thyrotoxic cases are intolerant of heat. Experience with operative procedures, even ligations, has convinced us that the ensuing reaction is more severe, if done during the extreme heat of midsummer, and it is our practice to postpone if possible until cooler weather all operations on severely toxic patients. Plummer has shown that the

course of exophthalmic goiter progresses in a series of waves or crises. Thyroidectomy should not be done during a crisis, but the patient should be carried through the crisis by the use of the measures outlined above, the thyroidectomy being reserved for a later period.

The operative technic will not be described in detail, as in the main it has become fairly standardized. All cases receive a preoperative hypodermic of morphine and atropine or morphine and scopolamine. Anesthesia may be local or general. In the severely toxic or substernal goiters and for all ligations we employ local anesthesia by infiltration. By this method we recently successfully removed a large substernal goiter from a man 76 years of age. In cases unsuited for local anesthesia, or in which it is unnecessary, the ordinary general anesthetics, nitrous oxide or ether, may be used with a high degree of safety. Ethylene and cervical plexus block have been highly recommended but we have had no experience with their use.

Ligation is of one superior thyroid artery under local anesthesia and later, if necessary, a like ligation on the opposite side. A few surgeons prefer the inferior thyroid as recommended by De Quervain.

Thyroidectomy usually consists of a bilateral partial lobectomy and removal of the pyramidal lobe if present. The low collar incision is used, skin and platysma reflected in one flap, a median separation of the preglanular muscles, with high section of the muscles, if the goiter be large or difficult to deliver. With increasing experience we have found it less often necessary to sever the muscles and it is our observation that the patients have less postoperative discomfort when it is not done.

Some of the highly important points in the technic are absolute hemostasis, avoidance of injury to the recurrent laryngeal nerve, the parathyroid bodies, and to the trachea. Drainage is employed in all cases and the skin is closed by skin clips.

Postoperative care is important, fluids are given freely, and morphine is employed when indicated. Cold sponges or even ice packs may be beneficial in the extremely toxic cases. In the extreme hyperthyroid reaction which sometimes follows operation on an exophthalmic goiter, iodine may be useful, postoperative as well as preoperative. The respiratory postoperative complications, of which tracheitis, bronchitis, pneumonia and obstructive dyspnea are the most common, may be largely avoided by care in anesthesia and the avoidance of injury to the trachea and recurrent laryngeal nerve.

*Mortality.* Our series is too small to form a

basis for comparison, yet it can be said that our experience teaches us that these cases may be managed to give a mortality comparing favorably with other surgical procedures. There have been no fatalities from thyroidectomy, including the exophthalmic goiters operated on. There was one death from a severe hyperthyroid reaction following a ligation, one adenoma with hyperthyroidism, and one exophthalmic goiter case died while in the hospital, during the period of preoperative treatment.

The end-results as regards cure may in general be said to be dependent upon the amount of damage present before recourse to surgery. The earlier a thyrotoxicosis is recognized and treatment instituted, the greater likelihood of restitution of the patient to a condition approaching normal. Operation cannot restore severely damaged viscera to normal, but if done early will usually prevent increasing destruction.

#### SUMMARY

1. Objections to surgery are the mortality, psychic trauma and pain and scar. The two latter are comparatively unimportant. The first may be kept within reasonable limits, and is not disproportionate to the advantages offered.

2. Colloid goiter is rarely a surgical condition.

3. Adenomatous goiters without hyperthyroidism should be removed if possible before toxicity ensues.

4. Adenomatous goiters with hyperthyroidism should be treated surgically, if the operation may be done with safety.

5. The preoperative treatment, consisting of rest, high caloric feedings, fluids and digitalis when indicated, is of value in both types of thyrotoxicosis, but more so in exophthalmic goiters, when iodine should also be given.

6. Much may be accomplished to reduce the mortality in exophthalmic goiter by close cooperation between the surgeon and the internist.

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## SUGGESTIONS CONCERNING THE CLINICAL STUDY OF THYROID DISORDERS

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The anatomic location of the thyroid gland has attracted both the laity and scientists to a consideration of its disorders. Early in the history of medicine, swellings of the neck were designated as goiters. The latter is the French version of the Latin, "gutter," meaning gutter or throat. Just when it came to be used only in connection with the diseases of the thyroid gland is not to be found in any of the chronicles of learning.

Richardson<sup>1</sup> very aptly says that "it is remarkable that the ancient writers of medicine have left so few records of so evident a deformity as goiter." However, beginning about the fifth century observations began to appear in the literature which have gradually and steadily grown until, at the present time, about 8,600 articles<sup>2</sup> have been written on the thyroid gland and its various disturbances. A very large percentage of this number have to do with clinical reports and studies as well as related pathologic classifications. All of which, in a measure, has led to a better understanding of the conditions surrounding thyroid disease.

More rapid advance in such medical studies of thyroid conditions has been stayed by the usual sluggish delivery and adoption of the ideas and facts evolved in the research laboratories. Accordingly an improvement might be affected in the matter of histories and clinical results by bringing the salient discoveries of investigators to the attention of practicing physicians in a concrete manner. There would undoubtedly develop a more productive interpretation of the clinical and laboratory findings in their relationship to each other.

In the light of scientific studies and facts obtained by reviewing the literature, it seems of import to elicit the following information in cases of thyroid irregularities:

Name .....

Age..... Marital State.....

Blood Pressure:

Sys..... Dias..... Pulse..... Temp.....

Basal Metabolic Rate:

Preoperative..... Postoperative.....

Chief Symptoms:

Character of Development:

Puberty..... Adolescence.....

Gradual..... Rapid..... Fast.....

Unilateral..... Bilateral..... Recurrent.....

Internal Secretion and Other Disorders:

Obesity..... Emaciation.....

Undergrowth..... Overgrowth.....

Sexual overdevelopment.....

Sexual underdevelopment.....

Sterility..... Diabetes.....

Infectious diseases.....

Focal infections.....

Nasopharyngeal infections.....

Allergic disturbances.....

Pregnancies:

Number..... Years..... Miscarriages.....

Comment .....

## HYPOTHYROIDISM\*

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Hypothyroid conditions have not received nearly so much attention as hyperthyroid, about which so much has been written, but when we analyze our daily patients we find the hypothyroid cases greatly outnumber the oversecreting thyroid cases and are probably equally important, if not the more important group. It is my intention to divide the cases into two main divisions: first, cases in which the metabolic rate determination is slightly lowered or might even be normal, where good results may be obtained from properly controlled thyroid medication; second, cases in which we deal with true myxedema and cretins, where the metabolic rate is distinctly lowered, and thyroid medication is a specific.

It is not intended to eliminate the regular routine of examination and history taking, but to ascertain, wherever possible, the more specifically related knowledge listed above. The taking of postoperative metabolic rate readings is essential in order to evaluate the progress of medical treatment or the efficacy of the amount removed by the surgeon in a given case. From the pathologist's point of view, the notations as to the character of development of thyroid disorders will aid him in deciphering the histologic evidences of the insults of disease and their significance as to toxicity.

Physiologic research has established the thyroid as the regulator of the uniform and usual metabolic processes. In this capacity it probably serves through the other glands of internal secretion and the sympathetic nervous system. It is important to observe such disorders clinically and weigh them in relationship to thyroid hypo- or hyperfunction.

The role of infectious diseases or recurrent focal infections to thyroid imbalance has never been established. It is, therefore, suggested that these be included as a problematic issue in clinical thyroid study. The great metabolic shock, as well as the internal secretion derangement, of pregnancies and menstrual cycles is such that a very evident relationship to so-called goiter exists.

A generalized uniform clinical study of the essentials of thyroid disease should lead to an easier assembly of more valued data with which the laboratory findings may be correlated.

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You are undoubtedly all familiar with Englebach's paper which he gave three years ago at Spokane, and his address at the University of Washington extension course, but may I refresh your recollection on several points brought out by his most excellent address. He made the statement that 70 per cent of all babies born weighing over eight pounds are hypothyroid and if these babies do not walk, talk, or have teeth at the end of one year, the percentage may be increased to 90. He also made the statement that the thyroid gland is responsible for the proper development of the pituitary and the latter for the proper development of the sex glands at the time of puberty; that individuals born with insufficiently developed thyroid glands, unless promptly recognized and treated, develop into subnormal men and women who make up a large percentage of the various types of neurotic and inefficient people. He also said that these abnormal endocrine cases present by far the largest group of any one type coming under the observation of the internist, and they outnumber cardiac, pulmonary and kidney diseases all combined. He made the statement that this condition could be prevented by the proper recognition and administration of thyroid preparations in the early stages of life, that is, during the first year. Later in this paper, under the discussion of myxedema, I shall spend some time on the infantile type of this disease.

There doubtless are a large number of definite conditions which can be at least improved, if not

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entirely cured, by the administration of controlled thyroid medication. Gardner, in a very fine article on hypothyroidism, discusses some twenty-five different conditions and diseases which he believes to be due to a hypofunction of the thyroid gland. I shall not attempt to discuss the entire list, but merely mention a few conditions which have come under our observation and been benefited by thyroid medication.

1. In obesity thyroid medication, if properly controlled, is of considerable value and will frequently hasten results, even though Joslin states that in cases which are under well controlled diet it may not be necessary and that he rarely, if ever, makes use of thyroid medication. The metabolic rate should be determined in practically all cases in which we propose to give thyroid substances in obesity. It is of the utmost importance to make the determinations before beginning the treatment, and from time to time throughout the treatment, if the best results are to be obtained. We find that the amount of thyroid or thyroxin necessary to produce results seems to vary in individuals, and it is our aim to keep the metabolic rate ten points above the normal rate, or above the rate determined before treatment was begun. In obesity and other cases in this group this amount can not be definitely mathematically calculated as in myxedema cases.

2. In the opposite type of individual, the thin, weak, listless patient, with poor appetite, who is unable to gain weight or strength but has no demonstrable organic disease, minute doses of thyroid seem to act as an excellent tonic and produce rather marvellous results. This type of case may be frequently stimulated by thyroid medication in very small amounts, where overdoses would produce considerable harm.

3. Another and most important condition for thyroid medication is the girl who has very painful menstruation, causing her to go to bed a day or so every month. If all pelvic diseases can be excluded, with the possible exception of the infantile type of uterus, a half grain of thyroid with a half grain of luminal three times a day for ten days before the expected menstrual period has in my hands given excellent results in the great majority of cases; much better than such drugs as benzyl-benzoate, morphine, atropine or codeine. Benzyl-benzoate has been very disappointing. Thyroid extract is probably the most dependable drug in functional dysmenorrhea.

4. Mastitis, especially in young girls with large lumps in the breast, is another disease which is

benefited by thyroid medication. In this condition young, single girls respond to treatment more readily than older, married women.

5. Women about the menopause who complain of swelling of hands and feet. This is a type of swelling in contradistinction to that caused by cardiorenal disease. It is worse in the morning and does not pit on pressure, while the swelling of cardiac diseases is usually worse at night and always pits on pressure. This is a diagnostic sign of some importance, as there is probably in most cases some hypothyroid condition in connection with the menopause. These cases are practically all benefited by thyroid medication.

6. For the goiter of puberty, as you all know, thyroid extract is a specific.

7. Anorexia, due to nervous origin, is also benefited by the same kind of treatment.

8. Colloid goiter at any age is practically always benefited by some form of thyroid extract.

9. Another class of patients greatly benefited by the use of thyroid are the young women, usually fat, listless, with scanty and painful menstruation, bad breath, usually large tonsils, with little ambition. Constipation is usually a prominent symptom in these cases.

At this point I would like to call your attention to a rather lengthy discussion on thyroid constipation by Beusch, in which he attributes a large percentage of functional constipation cases to hypothyroidism and in which he calls attention to the fact that in practically all myxedematous cases constipation is the rule, while in Basedow's disease the opposite condition frequently prevails. He believes that hypothyroidism should always be considered in cases where functional constipation is a prominent symptom, as these cases respond very quickly to thyroid extract medication. The metabolic rate in this class of patients is within normal limits, although frequently  $-8$  to  $-12$ .

10. In long standing cases of exophthalmic goiter, where a hypothyroid condition has taken the place of the hyperthyroid, it is necessary in some instances to administer thyroid extract in order to restore and maintain normal health.

11. Probably there are some symptoms of hypothyroidism in all cases which are convalescent from illness, hence the value of adding thyroid to other medication, such as iron and arsenic.

Mr. Black, president of the State Normal School at Ellensburg, has made considerable effort to subject all students to a complete physical examina-

tion in order to correlate their physical condition, wherever possible, with their inefficiency scholastically. All questionable cases are referred for more complete examination and metabolic rates wherever necessary. Many of the cases mentioned under the preceding heads have been found through these examinations, which have responded well to thyroid medication.

Before I pass on to the second general class of cases, those which have a distinct lowering of the metabolic rate, I wish to speak about the possibilities in the administration of thyroid extract to pregnant women. It is probably true that the condition of a large number of inefficient people, both physically and mentally, is due to two causes—a subnormal thyroid gland at birth and birth injury. According to Crile, if a pregnant woman is given thyroid extract through her pregnancy, her child will surely be born with a normal functioning thyroid gland and, as I have mentioned before, Englebach says that in a large number of inefficient people the cause is due to a poorly functioning thyroid gland in the early months or years of life. On Dr. Adson's recent visit to Seattle one must have been deeply impressed with the large number of children who presented evidence of birth injury.

If Crile's statement is right, it should be a simple matter to eliminate the first cause, the subnormal thyroid gland at birth, by the routine administration of thyroid gland during pregnancy. While I am quite sure that it is impossible to prevent all cranial birth injuries, nevertheless a large child causes more difficult, prolonged labor and the more frequent use of instruments, and thus increases the danger of injury to the brain at birth, not to mention the trouble during confinement which an abnormally large child may cause the mother.

Probably of secondary importance are the findings of Lange, who has recently done some experimental work on pregnant cats. Those which had one-fifth of the thyroid gland removed developed nephritis, while those in which the gland was not molested did not have any such complications. The administration of gland extract to the nephritic cats caused the symptoms to recede at once.

In women who have a tendency to thyroid enlargement, I am sure you have all observed that this gland enlarges greatly during pregnancy and sometimes to such an extent that it is of considerable inconvenience to the mother and may cause a great deal of trouble during labor. That thyroid

gland medication will relieve this condition we have proved in our own cases to our satisfaction.

For the last two years we have administered to all our obstetric cases from one-half to one grain of thyroid once daily during the last six months of pregnancy and, while the number of cases (which was about 100) is rather small on which to form any definite conclusion, we believe this treatment was of some distinct advantage, since we have had no over-large babies and none of the kidney complications of pregnancy, although the cases received other treatment, such as regulation of diet, urine examinations and so on. One case of birth injury responded very nicely to 10 c.c. of the father's blood intramuscularly and two spinal punctures to relieve the intracranial pressure.

I now take up the condition in which there is a distinct lowering of the metabolic rate. Such cases are classed as myxedema. Most of you are no doubt familiar with the controversy which took place between the two famous Swiss surgeons, Reverdin of Geneva and Kocher of Berne, as to which was the first to report and describe the symptoms of myxedema. In 1874 Kocher reported some of the disturbances which had occurred in a case in which he had removed all the thyroid gland. In September, 1882, while going to Geneva to attend the Congress of Hygiene, Kocher met Reverdin on the train and their conversation naturally drifted to surgical matters. They talked over cases of goiter in which they had removed all the thyroid gland and had seen the patients sink into a marasmic condition similar to cretinism.

Six days after this conversation Reverdin reported fourteen operations for goiter, of which there were three deaths. Of the patients who recovered he noticed that two or three months after operation they had sunk into a condition of weakness, paleness and anemia, with edema of the face and hands but without any albumin in the urine. This condition required a long time for recovery; in some cases it was still present after one year, and in others it was permanent. Reverdin called attention to the fact that nobody had described this condition before, although Kocher had mentioned a similar condition to him previously.

Kocher, in looking up his operations for goiter to report at the Surgical Congress at Berlin in 1883, collected 101 cases. Of these, 30 cases had developed a severe myxedema and from them he described the condition so completely and so clinically true

that nothing of importance has been added since. He also gave a full clinical description of that condition and recognized an etiological factor of the disease, total thyroidectomy. Kocher performed his last complete thyroidectomy January 6, 1883.

Myxedema may be surgical or acquired, and may occur at any age of life from the youngest infant to the oldest adult. I will first consider the adult form.

Surgical cases are undoubtedly the removal of too much gland, or the removal of a large cyst of the thyroid gland with subsequent injury to the remaining part, so that there is a degeneration of the part of the thyroid gland which has been left, or operations on colloid goiters. Lawrence, reviewing twenty-five cases of myxedema, gives the following in regard to the immediate cause of the disease: "Five said they were well until after pneumonia or severe influenza and the symptoms developed shortly thereafter; three ascribed their condition to pregnancy which was in each case accompanied by toxic symptoms; two patients first noticed symptoms shortly after severe nervous and physical strain, and in one case the hypothyroid followed surgical operation for goiter." In the remainder of the series there was no definite etiology for the condition, although several cases gave a past history of nervousness and cardiac palpitations which suggested that overactivity of the gland had preceded the present hypothyroid function.

The most common presenting symptom in this series of cases was a subefficient bodily condition. In fifteen cases the complaint for which the patient sought relief was described as weakness, chronic fatigue, lack of ambition or nervous exhaustion. From the analysis of the symptoms which he gives it is clear that the history of the hypothyroid patient has only one characteristic feature, subefficiency of the bodily machine. Whatever the symptom for which the patient seeks relief, there is always in the history a background of inefficiency, usually physical and in the cases of long duration mental as well.

On physical examination, the patients in this series were divided into groups—those with myxedema and adiposity, and those without, although Plummer of Rochester only recognizes myxedema when they have edema and with a metabolic rate of more than  $-18$  per cent. Gardner claims malnutrition may cause a metabolic rate of  $-20$ , but in

properly nourished cases it is probably rarely more than  $-5$  per cent.

Just a word about the symptoms and diagnosis of myxedema as described by Kocher. I am quite sure this condition is frequently overlooked and I will mention some of the most important symptoms. First, these symptoms may appear in weeks, months or even years after a severe illness or thyroidectomy. The younger the person the more marked are the symptoms, both physically and mentally.

The first symptom probably is that the patient feels weak and tired and the slightest exertion causes extreme lassitude. Pain and heaviness of the limbs, tremor of the extremities and sensations of cold are the most usual symptoms of such patients. Their movements become slow and awkward; they lose their capacity for doing fine or precise work. If the patient is a barber, he drops his scissors and razor unexpectedly; if she is a seamstress, she can no longer do fine needle work. In one case the patient broke nearly all the dishes in the house. Naturally, this condition reaches its maximum when the hands become edematous. At the same time the intellectual powers diminish, speech is difficult or slow, the patient becomes apathetic; and as I have said before, the younger the patient the more marked are these mental symptoms.

When the disease is well established the face is swollen; the eyelids, especially the lower lids, are greatly swollen; the nose is large, the lips thick and cyanotic; the face being puffed, has lost its mobility and is without expression, giving the patient an air of stupidity. The skin of the hands, feet and body gradually become swollen. This edema, in contradistinction to that of heart and kidney disease, is more pronounced in the morning and may improve toward night, if the condition is not extreme. This edema does not pit on pressure. The swelling of the skin extends to the mucous membrane, the tongue is swollen, the patient becomes anemic and menstrual disturbances are common, being either too profuse or too scanty. Constipation is the rule.

What are the classical symptoms of myxedema? First, generalized edema which is more marked in the hands, shoulders and supraclavicular regions. Second, and most important, the edema does not pit on pressure. Third, the edema is worse in the morning. Fourth, on account of the puffiness of the lower eyelid the line of vision is raised to

such an extent that the patient's forehead is continually wrinkled. Fifth, unless the disease is in the advanced stage, there are seldom any urinary findings. Advanced cases may have all the evidence of a chronic nephritis. Finally, a metabolic rate of  $-20$  to  $-40$ . This symptom I have purposefully mentioned last, as it is not always practical to have a metabolic rate determination made and most cases must be recognized, or at least suspected, without the aid of this conclusive test.

What may be the outcome of a severe case of hypothyroidism? If the disease is not recognized and proper treatment instituted, the patient may either die from the condition itself or an intercurrent disease. In some instances, after more or less period of development, these cases become less marked, and in some cases disappear entirely. This is probably due to a small piece of the thyroid gland being left and this hypertrophies until it is large enough to give out a normal amount of thyroxin.

According to Boothby, with whom my associate Dr. Richardson had a personal visit, a person who is suffering from myxedema should not be condemned to life-long thyroid medication until after the lapse of two years from the onset of the disease. After that period of time the thyroid rarely regains its function and it is usually necessary for the patient to take his daily dose of thyroid as long as he lives. There is essentially no difference between the conditions of surgical and acquired myxedema, only perhaps that the surgical cases respond to treatment more quickly.

I will now report in detail a case of surgical myxedema which came under our observation sometime ago. In going over this case her symptoms practically fulfilled all the classical symptoms which were described by Kocher in his original description of the disease.

Mrs. C., age 40, white, American, housewife, was brought to our office June 5, 1923. Family history, negative. She had had no diseases except the usual diseases of childhood; menstrual history regular, usually lasting twelve days, recurring every twenty-eight days.

Previous operation: Eleven years ago one tube and one ovary removed; one year ago thyroidectomy performed. Present reason for visit, weakness and excessive menstrual flow. During pregnancy fourteen years ago goiter developed and gradually increased in size until June, 1922, when it was removed. General health had always been good until that time and operation was performed on account of pressure symptoms. No metabolic rates was determined previous to operation; weight at operation 130 pounds, now 157 pounds.

After the operation strength was gained very slowly and in September, three months later, she began to lose energy and to feel very weak, although she

gained markedly in weight, but lost considerable color. She was given iron intravenously and by mouth without any apparent effect. Her loss of strength and energy has progressed until at present she can sit up but a few minutes at a time and can not walk without assistance. She says she is unable to do any work at all; she has no appetite although she persistently gains weight; she cries very easily; she can not remember from day to day and feels as if she were losing her mind; she also complains of being unable to keep warm and that she never perspires; has tingling sensation all over her body and complains of some soreness of her teeth and gums. All these symptoms have appeared since her goiter operation in June, 1922.

Physical examination: Large, flabby, pale, sallow, white woman with very dull expression; apparently very little interest in life. Several crowned teeth; throat, negative; neck shows scar of former operation; chest, negative; heart possibly slightly enlarged, otherwise negative; abdomen, except for scar of former operation, negative; vaginal examination shows uterus somewhat enlarged. Reflexes somewhat sluggish; skin very dry, with a thick appearance; hands somewhat enlarged; excessive amount of fat over the body, especially of the face and neck.

Laboratory report: Basal metabolic rate,  $-35$  per cent; urine, negative; Wasserman, negative. Blood count: Hemoglobin, 35 per cent red blood count, 2,400,000 cells; white blood cells, 7,000; 40 per cent small lymphocytes; 10 per cent large lymphocytes; 50 per cent polynuclear neutrophiles.

Treatment and subsequent notes: On June 6, 10 mg. thyroxin was given intravenously and in forty-eight hours there was a slight improvement, as shown by the patient being brighter and more easily kept warm. By the end of the week she had lost five pounds in weight, had gained considerable strength and said she felt better than she had in the past nine months. She was given another 10 mg. of thyroxin intravenously and on account of the severe anemia was given 500 c. c. of citrated blood as a transfusion. Thyroxin was given in small doses every third or fourth day until July 14, at which time her metabolic rate was  $+2$  per cent; her hemoglobin had increased to 52 per cent, the red blood cells to 3,800,000. From this time she was given the sodium salt of thyroxin by mouth in 2 mg. doses every second day, but it was found that her metabolic rate was gradually decreasing and the thyroid was increased to 3 mg. daily by mouth. This did not increase her metabolic rate and it dropped to  $-16$  per cent by August 16. She was then given thyroxin intravenously once a week and her metabolic rate increased to as high as  $+26$  per cent at which high rate she was quite nervous and lost considerable weight, although able to be around and had no further menstrual disturbances.

Her face had lost its dullness and her entire mechanism, as would be expected, had taken on the picture of hyperthyroidism. She was again put on thyroxin by mouth and again her metabolic rate gradually dropped to  $-12$  per cent and, although she was still able to be up, she felt that her old condition was returning. She was then started on desiccated thyroid, 2 gr. daily, and has been able to decrease this to  $1\frac{1}{2}$  gr. daily. She has been able to take care of her household work and maintain her normal weight for the past year and says she feels very well, though she is unable to withhold her daily thyroid ration.

This case shows the result of a total thyroidectomy, producing what we might call complete surgical myxedema, with the existing condition that the patient was unable to metabolize thyroxin by

mouth, although desiccated thyroid was handled very satisfactorily. This patient has had eighteen different metabolic determinations and she can at the present time estimate her own rate very closely by the way she feels.

**Treatment of myxedema:** In reporting to you the case just mentioned I have described the way in which we treated the case which came under our observation. In looking over literature and after some personal communications with Dr. Plummer, I find that some of the things which we did could have been omitted without doing any harm and without retarding the progress of the case. The blood transfusion is of some value in this condition, as it is in any case of anemia from any cause. The iron and arsenic which was given by mouth and intravenously was probably of no value.

The treatment of myxedema or hypothyroidism may be summed up as follows: Remove all foci of infection, rest in bed in severe cases, fresh air with plenty of good nourishing food, and finally and most important, thyroxin or thyroid extract in some form which the patient can assimilate.

As you all know, thyroxin is the active principle of the thyroid gland. The human body probably contains from 12 to 14 mg. of thyroxin and uses daily about 1.6 mg. If you are given a case in which we will say the metabolic rate is 37 per cent, it would be treated in either of the following ways: First, you could give one large dose of 10 mg. of thyroxin. As each mg. raises the metabolic rate 2 per cent, the maximum result of the 10 mg. will be evident in practically from four to seven days. At the end of seven days another metabolic rate should be made and on the second reading enough thyroxin should be given intravenously to raise the metabolism to normal. For instance, if the metabolic rate is —37 per cent and you give 10 mg. of thyroxin, at the end of seven days the metabolic rate should be approximately —17 per cent. If at this time it is —17 per cent and you give another intravenous dose of 10 mg., at the end of another week the rate should be approximately +3 per cent. From then on the treatment may be conducted as follows: You may give from 1 to 2 mg. daily intravenously or one large dose, about 10 mg., once a week. Probably when the case is up to normal, small doses every day or every second day are the best.

As it is quite a bit of trouble for the doctor and the patient to keep continually giving thyroxin intravenously, some other ways may be substituted.

You may give it in the form of tablets by mouth. This tablet should be taken once daily before meals and followed by a full glass of water. In this way absorption is increased and the desired effect more surely realized. However, in some cases it is impossible to secure the desired absorption of thyroxin from the intestinal tract, and in these cases probably a good powdered extract of the thyroid gland of from one to four grains daily will have the same effect of maintaining the metabolic rate.

Another plan of treatment is as follows: Given a patient with characteristic metabolic readings of —30 to —40 per cent. Such a patient may be given from two to four grams of desiccated thyroid by mouth. After such a large dose, in about twelve hours the patient complains of some of the following symptoms: headache, loss of appetite, occasional vomiting, pains in the back, legs and joints, perhaps some rise in temperature, say about one degree. These symptoms are most marked on the second day. Usually on the second or third day there is a definite change in the appearance of the patient. The edema clears up, the face becomes more expressive, the speech is faster and more distinct, the skin becomes moist and the scales commence to shed. If at the end of six days the metabolic rate is found to have come from its original level half way to normal as a result of the first dose, a second dose of similar size should be given about the sixth or seventh day. If, however, the metabolism has come three-fourths of the way to normal, a dose of one-half the size of the original will be sufficient. Sometimes a third smaller dose may be needed to bring the patient's metabolism to normal. Then continue with the required daily dose. The blood urea should be carefully followed during the period in which the edema is disappearing and the frequency and size of the dose governed accordingly. Sometimes the blood urea may be raised from 40 to 80 mg. per 100 c.c., if the water content of the edema is eliminated at a much faster rate than its nitrogenous content.

After the normal metabolic rate is obtained, experience has shown that as a rule one or two grains of desiccated thyroid or 6/10 mg. of thyroid by mouth is usually the correct daily dose. Once the daily dose which is required to keep the metabolic rate normal is ascertained, usually that is sufficient for that patient for the rest of his life and it is very seldom necessary to change the dose from day to day.

I will now discuss the important conditions of in-

fantile myxedema. Hallez, in *Progressive Medicine*, Paris, 1923, 616-620, discusses this condition very thoroughly and at some length.

Thyroid insufficiency and its most serious phase, myxedema, constitute the most important chapter of the pathology of the endocrine glands in early infancy. It is the standard thing to say that myxedema appears almost always at about the second or third year; this is true in the majority of cases. Nevertheless, it is not a rare thing for signs of functional insufficiency of the thyroid gland to appear during the first months of life. It has been possible to connect these clinical symptoms with anatomic alterations revealed at autopsy, which extend to almost complete absence of glandular tissue in certain cases of very acute congenital myxedema.

If one watches for signs of thyroid insufficiency, only from the first or second year of life, it is possible that progressive disturbances, which can develop into "myxedematous idiocy" (Bourville) will have become installed which could have been prevented or at least attenuated by early thyroid therapy. It is, then, of the greatest importance to be able to recognize the more or less acute manifestations of thyroid insufficiency, which may appear from birth or during the whole period of early infancy.

If the arrested functioning of the thyroid gland is the cause of myxedematous infiltration of the skin in the adult and intellectual torpor in the young child, it is equally the cause of arrested physical development and retarded intelligence, the more acute the earlier the glandular disturbances make their appearance. This condition in early infancy may be divided into the three following types:

I. Congenital myxedema, properly speaking. This appears at birth or very shortly afterwards with every manifestation, so that the diagnosis is obvious. The following symptoms can all be present in one patient, but a few of these may predominate:

First of all, the appearance of the head is characteristic: wide in the back, narrow in the front, perfectly brachycephalic in type. The anterior fontanel remains wide open beyond the usual time of closure; the hair, which may be abundant at birth, is fair or auburn, stiff, similar to horse-hair, but falls out easily, when local alopecia is observed, particularly at the temples; often the scalp is the seat of obstinate seborrhea or eczema.

The physiognomy expresses apathy, the complexion is waxy, the eyelids are swollen with chronic blepharitis at the edges, the nose is short and flat,

the nostrils wide. The cheeks pendant and flabby, the ears thickened and detached, give that appearance described as "full moon" in older myxedematous patients. The mouth is wide, half-open, the tongue becomes thickened and often protrudes between the lips. Saliva dribbles perpetually over an undeveloped, receding chin. Primary dentition will be retarded and slow and these first teeth will be irregular and affected with early caries. The neck is thick and short, sunken into the shoulders; palpation of the thyroid gland, which is atrophied or perhaps absent, is not possible.

Soon the patient will vaguely resemble a rachitic child, because the thorax and abdomen are enlarged, the end ribs project and the limbs are short and stunted. Radiography reveals retarded ossification.

On palpation of the skin a disagreeable sensation of dryness is felt. The skin is rugose and wrinkled. Pseudoedema exists, firmer than real edema, gelatinoid, not retaining the impression of the finger. The name of myxedema, given by Ord, seems inappropriate for, as shown by Marfan and Guinon, it is often the cellular tissue fat which simulates the swelling. The nails are brittle, the fingers stunted and there is insufficiency of sudoral and sebaceous secretion. The appetite is usually diminished. One three months old child had never shown any inclination to take nourishment.

Even though at this age it may be premature to speak of intellectual backwardness, it is already apparent that the gaze is vague, distant; the baby is not interested in what is going on around him, in toys, or in those who have care of him. The internal temperature is always lowered and fluctuates often between 95° and 97°; contact with the skin gives a sensation of cold.

This complete and congenital myxedema is almost always a result of the entire absence of the thyroid gland and it is quite uncommon. Most frequently it is the monosymptomatic or attenuated forms which the parents draw to the attention of the physician when the child is weaned.

II. Early myxedema in the young infant. This does not make its appearance, or is not recognized, until the end of several months, even a year. The parents are astonished at not seeing their child smile, and at the nonappearance of the first teeth at the usual time. The mother becomes anxious when she notices that the child is indifferent to her, does not recognize her, cannot stand erect nor walk as other children.

Although manifestations may be slower and more

attenuated than in the preceding form, this form of myxedema may also be of congenital origin and be the result of the arrested development or atrophy of the thyroid gland, commencing in fetal life. Then the symptoms of myxedema above described, but not quite so marked, make their appearance unless appropriate treatment interrupts their development.

The usual absence of thyroid disturbances during lactation has been interpreted in many ways. The following have been successively discussed: The moderate production of toxins by exclusive breast feeding (Challand de Belval) and, as a consequence, the secondary importance of the thyroid gland at this period; further, the passage via the mother's milk of the principal ingredients of the internal secretion of the thyroid gland; finally, coincident with weaning, the disappearance of the substitute secreted by the thymus. None of these theories should be accepted exclusively, but they may all have their share of truth.

Finally, early myxedema in the infant can be acquired, developing from an abscess of the thyroid gland, acute thyroiditis (Shields and Rave), measles, whooping cough, diphtheria, or as shown by Spolverini, during lactation when the mother or wet-nurse is affected with simple goiter. However, the congenital and acquired types of myxedema are not the only ones observed during the course of early infancy. More frequently, on the contrary, a less manifest clinical picture can be observed from birth or makes its appearance at the end of several months, viz.:

III. Mild, attenuated myxedema. A more complete, more methodical somatic examination is necessary in order to recognize these cases. It is in these particular cases that thyroid treatment is the most successful. The patients may show various degrees of intelligence, but usually their mental is proportionately less affected than their physical condition. Lateness in speaking, agitation and instability may be the only troubles of an intellectual order.

The complexion is pale; the hair is scanty and downy; the facies is oldish as in undernourished conditions; however, only remotely does it resemble that of a complete myxedema. The skin is dry and rugose, but the characteristic infiltration of real myxedema may be absent, as may also the lowering of body temperature. The limbs are small, the chest narrow, but the abdomen is large, flabby or distended. In particular, a slow and irregular weight curve is present, which the method of nurs-

ing and the absence of digestive troubles cannot account for. The statural growth is insufficient. Finally, there exists a muscular hypotonia, abnormal in an infant, retarded dentition, adenoid vegetation and lateness in walking. In such cases thyroid therapy gives remarkable results.

While in the adult spontaneous myxedema is much less frequent in the masculine sex, congenital or early myxedema would seem to be only slightly more frequent in little girls. Direct heredity is extremely rare, as women affected with typical myxedema are usually sterile; however, mild myxedema and hypothyroidism can be hereditary. Dissimilar heredity (P. Vallery-Radot) is more frequent. A woman affected with exophthalmic goiter may give birth to a myxedematous child or to several children, some of which may be affected with exophthalmic goiter and the others with myxedema. Among the occasional causes the most frequently observed are alcoholic parents, nervous illnesses, consanguinity, twinning (without either of the twins having fatal myxedema).

Diagnosis is perfectly obvious at first sight in complete myxedema. Diagnosis is difficult only when the child is very young or is affected with one of the mild types, in which the symptoms are few and not acute. It is not necessary to refer to the gross errors made, such as confusing edema of renal origin and congenital trophedema with myxedema. Certain cases of rickets or mongolianism can, on the contrary, give rise to a more refined diagnosis.

One must not confuse real rickets with the pseudorachitis of myxedema. It is certain that the myxedematous patient can equally be rachitic. The bone deformities of congenital thyroid insufficiency, such as the curving of the lower limbs in particular, the failure of the anterior fontanel to close at the usual time, and the increase in the size of the head are the only similar conditions. However, ossification is more retarded in myxedema and there is no supramalleolar inflammation or rachitic rosary.

Mongolian idiocy, or better, mongolian retardation, is at times difficult to differentiate from myxedema, particularly when these two diseases are manifested in their mild forms. In mongolianism the facies is Asiatic, the eyes are almond-shaped, with epicanthus and the long axis oblique from the top to the bottom and from the outside to the inside. Children affected with this disease are restless, unstable, slow mentally, but usually have their musical

sense fairly well developed. The possible coexistence of myxedema and mongolianism renders diagnosis even more difficult.

It should be remembered that the most reliable results are obtained by the test of thyroid treatment which generally has no effect whatsoever on mongolianism but gives favorable results in functional insufficiency of the thyroid gland. Rarely do cases of congenital myxedema attain an advanced age or, according to King, develop into self-sustaining individuals, but in order to assure the best results the thyroid treatment should be begun at an early age and continued for a very long time. The intellectual development is equally dependent upon early treatment, the length of time it is administered and on the degree of glandular insufficiency.

**Curative treatment.** The only remedy of value is a dry thyroid extract. This is easily administered to infants by mouth, in a condensed form, pulverized and mixed with a little milk or incorporated with other foods. The dosage varies according to the age, the extent of the disorders and the individual reaction. To give one an idea it can be said that for infants the medium dose should be one centigram for every six months of age, the smallest dose varying from one to several milligrams and the largest dose per diem should not be more than five centigrams. In the majority of cases these doses are sufficient in early childhood.

On commencing the treatment the thyroid medicine should be administered for ten or fifteen consecutive days, interrupted by rest periods of five to ten days. Later the treatments can be given for ten days with ten day intervals. It is of importance to use careful supervision and caution in the administration of thyroid treatment of any kind. Too rapid loss of weight, tachycardia, insomnia, agitation, fever and diarrhea are the alarming signs which necessitate temporary interruption of thyroid medication.

Even though infants may tolerate large doses (that is in proportion to their age) more easily than adults, during careless treatment, dyspnea, oliguria, epileptiform phenomena, syncope and even sudden death have been known to supervene. On the other hand, if the rectal temperature remains below 100°, the hypothyroid symptoms are slow in disappearing, and the basal metabolism remains low, the dosage can be carefully increased.

**Etiologic treatment:** This consists of suspending breast feeding by a wet-nurse affected with goiter or exophthalmic goiter and treating the casual in-

fectious disease when one is able to discover it. In this connection attention is called to hereditary syphilis. In a recent case it was possible to test the value of special treatment in conjunction with thyroid therapy in an infant of three months, born of a syphilitic mother and suffering from very obvious congenital myxedema. In spite of the fact that the blood Wassermann was positive only in the mother, it was plainly evident that a very rapid improvement occurred from the moment mercurial treatment was added to thyroid therapy.

### INCIDENCE OF RICKETS IN THE BREAST FED INFANT

GEORGE J. MOHR, M.D.

SEATTLE, WASH.

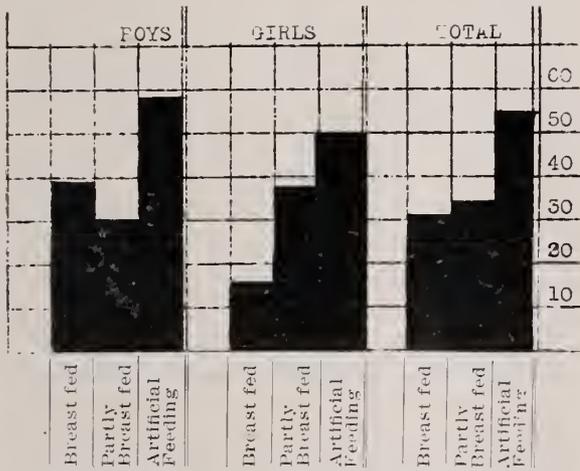
The present observations were made for the purpose of determining the incidence of rickets among an unselected group of breast fed infants, as contrasted with the occurrence of the disease among a similar group of artificially fed babies. Since the infants were not under observation until they had reached varying ages, no attempt is made to evaluate the significance of many other factors that are necessarily operative in determining the presence or absence of rickets, such as seasonal incidence of the disease, home conditions and type of complementary or supplementary feedings.

One hundred eighty-two infants, varying between the ages of three months and eighteen months, were examined for presence of active rickets or indication of bony changes attributable to rickets. The presence of any one of the changes usually produced by rickets was considered evidence of presence of the disease. Craniotabes, beading of the ribs, enlarged epiphyses and characteristic chest deformities of rickets were noted. Anemia, pot belly, delayed dentition and delayed closure of the fontanelle, unless associated with other signs of rickets, were not included as rachitic signs. Negro and Oriental infants were excluded. The examinations were made by Dr. C. V. Spickard and myself.

The infants were brought to the Well-Baby Clinic, conducted by the Home Economics Department of the University of Washington. The mothers constitute a class of considerably better social status than that encountered in dispensary services and in the usual infant welfare clinic. Relatively few of the mothers had had special instruction in infant feeding. Some of them had followed their physicians' advice as to feeding and very few had been seen by pediatricians. Findings on which the

**INCIDENCE OF RICKETS AMONG 182 INFANTS  
3 TO 18 MONTHS OF AGE**

	NON-RACHITIC					RACHITIC										
	M	F	T	PER CENT	M	PER CENT	F	PER CENT	T	PER CENT	M	PER CENT	F	PER CENT	T	PER CENT
Entirely Breast Fed.....	56	33	89	48.8	34	60.7	28	84.8	62	69.6	22	39.0	5	15.1	27	30.3
Partially Breast Fed .....	30	26	56	30.7	21	70.0	16	61.5	37	66.0	9	30.0	10	38.4	19	33.9
Entirely Artificially Fed.	17	20	37	20.5	7	41.2	10	50.0	17	45.9	10	58.8	10	50.0	20	54.0
	103	79	182		62	60.2	54	68.3	116	63.7	41	39.8	25	31.6	66	36.2



following tabulations are based on those observed on the initial examination on being brought to the clinic.

Infants classified as "entirely breast fed" include those who were on the breast exclusively on being brought to the clinic, or those who had been kept on the breast until approximately nine months of age. Solid foods had been introduced at varying ages with these latter infants. Those infants placed on artificial food at an age less than one month were considered entirely artificially fed.

Of eighty-nine breast fed infants twenty-seven, or 30.3 per cent, showed some sign of rickets. Of fifty-six infants partially fed on the breast, nineteen, or 33.9 per cent, showed rachitic changes. Twenty, or 54 per cent of the infants entirely artificially fed showed rachitic signs.

**CONCLUSIONS**

1. Breast feeding of infants, at least in the Pacific Northwest, does not entirely protect the child against rickets.
2. Rickets occurs less frequently in the breast fed infant than in the artificially fed.
3. Antirachitic measures should be routine in the feeding of all infants.

**PORCUPINE QUILL IN THROAT**

REMOVAL BY DIRECT LARYNGOSCOPY

J. G. PARSONS, M.D.

LEWISTOWN, MONT.

From Attix Clinic.

R. R., age 40, employed as a sheep herder, came to Attix Clinic July 7, 1925, giving the following history: Fifteen hours previously he was eating rabbit stew and suddenly felt a sharp pain in the side of the throat, located by him on the left side at the level of the thyroid notch. He began to cough and vomit, and thought he had swallowed a bone. He has no teeth and is in the habit of swallowing his food in large morsels. When seen he was coughing frequently and complaining of pain and having evident difficulty in breathing. He vomited several times while waiting for examination.

On introducing a Jackson direct laryngoscope a slender white object, resembling a splinter of bone was observed projecting from the left side of the throat, passing underneath the epiglottis and extending across the glottis. This was removed with a Brünings' forceps, and proved to be a porcupine quill. The dark portion was imbedded in the tissues and the white portion projecting into the throat had given the appearance of a bone splinter.

Incidentally it was later learned that the "rabbit" was a prairie chicken, being given another name because of certain legal requirements at this season of the year. It would seem that the bird had been in some way wounded by the porcupine and the quill had worked into its flesh.

The case is of especial interest because of the unusual nature of the foreign body, as well as its location. When the patient swallowed, the quill was hugged down on the larynx by the epiglottis.

Dr. Chevalier Jackson writes me that they have never had this kind of foreign body at the Bronchoscopic Clinic in Philadelphia. The writer would be interested to know if any similar case has been reported.

# NORTHWEST MEDICINE

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SEPTEMBER, 1925

## EDITORIAL

### AFTERTREATMENT OF THE TUBERCULOUS PATIENT

Dr. Allen K. Krause, of Johns Hopkins University, one of the foremost scientific investigators in the tuberculosis field, recently made a tour of the country in the interest of this work. His lectures and voluminous writings have been one of the big factors in successful progress against this disease. Often he has stated that the greatest fight of the medical profession and all civilization is the war against tuberculosis, because this disease claims such a heavy toll in morbidity and mortality, there being a million cases and over 100,000 deaths annually in our land. High as this death rate is there has been a marked decrease in the last few years and one of the leading factors has been sanatorium treatment. It has proven so successful because it offers better opportunity for supervision and education of the patient. Dr. Krause stated that these institutions are sending back 80 per cent improved and arrested cases. But unfortunately this ratio of 80 to 20 becomes reversed in after years and only 20 per cent of these discharged patients remain well, while 80 per cent die. This appalling death rate of discharged patients, due to relapse of tuberculosis, is avoidable and can be laid in most cases to negligent aftercare.

If the medical profession fully understood that a man who has once had tuberculosis is never the same individual as formerly, and that for the rest of his life he must so adjust matters as to avoid serious strain, there would be more activity in the follow-up care of these cases. Experience obtained from dealing with tuberculous patients teaches there are a few fundamental factors which must be considered in order to help solve this problem. First, every tuberculous patient while under treatment must be instilled with the fact that for the rest of his life he may be only 50 to 75 per cent of his former self and must adjust his activities accordingly. The value of this has been lost by false ideas of the patient, his family, friends, and even the doctor, who look upon a recovery from tuberculosis

as from some acute illness. They consider it a self-limited affair, from whose menace, having apparently recovered, the patient is forever free. They do not fully realize that in recovered tuberculosis the bacilli are simply walled off, ready again to spring forth at any undue strain, whether it be one or twenty years after recovery. Therefore, the first step is the education of the patient regarding this fundamental fact during the time he is under treatment.

Of next importance in this campaign is the follow-up care or supervision. While some relapse because of the ordinary demands made upon them in making a living, probably the greatest number slip because of false ideas as to their true conditions or a gradually developing carelessness. Each community must solve this problem by providing places of employment for these more or less handicapped individuals. But the real big factor is the after-care or supervision by the medical man. The patient may understand his physical limitations and secure suitable work, but unless there is some guiding, restraining hand to aid him, the time will come when he will feel overconfident and careless, and his tuberculosis again become active. This can be prevented only by having every patient report regularly for examination and advice. The physician who takes a keen interest in tuberculosis appreciates the importance of supervised work, rest, food, habits, etc. The patient seeing such intelligent interest displayed in his case will soon recognize the pecuniary and health value in remaining under adequate medical supervision for an indefinite period of time.

### PUBLICATION OF CASE REPORTS

As one continues practice over a period of years, he realizes more and more that his most important medical education is derived from his own experiences in the treatment of patients. The recent graduate rightly believes that he has received invaluable instruction from his professors, laboratory work and hospital internship, but later discovers that the most vital and abiding knowledge obtainable is secured through his successes and failures in the treatment of patients on his own initiative. It is well recognized that the most valuable teachings from private practice are not all obtained in the experiences of the city practitioner. No man has the variety of cases which test his own capabilities as fall to the lot of the busy country practitioner.

The most instructive feature of the average medical meeting is the discussion of the formal paper,

with the recital of personal experiences on the part of physicians from all walks of medical life. Yet few of these personal experiences with their richness of details, many of them being of thrilling interest, reach the body of the profession. The average practitioner seems to believe he cannot publish an account of his own doings unless he elaborates from study of textbooks and supports it by the latest scientific investigations. But often a brief presentation of the facts of one's personal cases adds value to the general fund of medical knowledge. It is not necessary to adorn such reports with elaborate researches. The description of the case, with the individual treatment of the same, oftentimes suffices to produce something well worth while and of interest to the profession at large.

This discussion is intended as an appeal to the average reader to present for publication reports of cases of unusual interest. Such will be received and offered to the readers of this journal with the knowledge that they will be appreciated and recognized for their value. It is confidently believed that all will endorse the expansion of this feature of the journal. It is hoped that this request will meet with a response from many physicians in this Northwest section, who will feel disposed to contribute such reports.

#### THIS YEAR'S WASHINGTON MEETING

The annual meeting of the Washington State Medical Association will be held at Olympic Hotel, Seattle, September 17-19. As indicated by the program appearing below, the papers presented at this meeting are nearly all from members of the organization, representing cities in all parts of the state. The visitors are Drs. Henry Christian, of Boston, I. M. Jones, of Los Angeles, Calif., and J. S. Lundy, of the Mayo Clinic, all of whom will read papers on special topics. The discussion of papers will be opened by doctors from all the leading cities of the state. This arrangement assures a widespread interest in the meeting and it is believed there will be a large attendance. Special arrangements have been made to entertain the golf enthusiasts the day preceding the medical meeting at a tournament, in which it is believed there will be over a hundred participants. This will be a season when pleasant weather is ordinarily anticipated, which will help to promote sociability and enjoyment of the attractions of the city. The profession of Seattle extends a cordial invitation for all members of the state association and the profession from adjacent states to attend this meeting.

Reports of committees have been published in advance of this meeting. This may be of considerable benefit from several standpoints, particularly that of giving the general membership throughout the state a line on what has been done during the year by the different committees. Also it should increase the attendance at the scientific meetings because heretofore many members have attended Board of Trustees or House of Delegates committee meetings, listening to their reports, who will now have opportunity of reading these before attending the committee meetings. As the reports will not be read at the meetings, it should shorten the business sessions.

#### PROGRAM

##### THURSDAY, SEPTEMBER 17

- 9:00 a.m. Board of Trustees.  
9:30 a.m. House of Delegates and Committees.

##### SCIENTIFIC PROGRAM

- 11:00 a.m. **Achlorhydria Family of Diseases**, Dr. Henry Christian, Boston. Discussion opened by Dr. Frederick Epplen, Spokane; Dr. J. M. Blackford, Seattle.
- 12:00 **Public Health League Luncheon and General Meeting.**
- 2:00 p.m. **The New Management of Summer Diarrhea**, Dr. P. D. McCornack, Spokane. Discussion opened by Dr. J. I. Durand, Seattle.
- Fractures of the Upper Extremity and Their Treatment**, Dr. W. A. Taylor, Ellensburg. Discussion opened by Dr. S. Caldbick, Everett.
- Fractures of the Leg and Methods of Treatment**, Dr. H. E. Cleveland, Burlington. Discussion opened by Dr. H. C. Randolph, Aberdeen.
- 7:15 p.m. Banquet, Olympic Hotel.

##### FRIDAY, SEPTEMBER 18

- 9:30 a.m. **Deafness**, Dr. Isaac M. Jones, Los Angeles. Discussion opened by Dr. A. T. Wanamaker, Seattle; Dr. E. C. Wheeler, Tacoma.
- Cardiac Factors in Surgical Indications**, Dr. George H. Anderson, Spokane. Discussion opened by Dr. P. V. Von Phul, Seattle.
- X-Ray Symposium**, arranged by Dr. C. R. Fishel, Chairman, Tacoma.
1. **Demonstration of Pathologic Gallbladders**, Dr. C. J. Johanneson, Walla Walla.
  2. **What a Fluoroscopic of the Chest May Show**, Dr. W. A. Smith, Bellingham.
  3. **Radiation as Applied to Cancer**, Dr. L. L. Stephens, Seattle.
  4. **Services of the Radiologist to the Physician in General Practice**, Dr. Joseph Aspray, Spokane.
- 2:00 p.m. **Cardiac Infarct, a Frequent and Easily Diagnosable Condition**, Dr. Henry A. Christian, Boston. Discussion opened by Dr. E. P. Fick, Seattle; Dr. J. R. Turner, Tacoma.

**Essentials of Tuberculosis for the General Practitioner**, Dr. Christian Quevli, Tacoma. Discussion opened by Dr. L. G. Woodford, Everett.

**Points of Diagnosing Lesions of the Upper Urinary Tract. Lantern Slides**, Dr. O. A. Nelson, Seattle.

**Demonstration of Mechanical Improvements in the Treatment of Femur Fractures**, Dr. Mitchell Langworthy, Spokane.

7:30 p.m. Dinner Dance, Olympic Hotel.

#### SATURDAY, SEPTEMBER 19

9:00 a.m. House of Delegates. Election of Officers.

10:00 a.m. **Hematuria—A Study of 300 Cases**, Dr. A. H. Peacock, Seattle. Discussion opened by Dr. H. S. Argue, Tacoma.

**Comparative Value of Various Types of Regional Anesthesia**, Dr. John S. Lundy, Mayo Clinic. Discussion opened by Dr. C. F. Eikenbary, Spokane; Dr. E. O. Jones, Seattle.

**Mediastinal Infections**, Dr. W. L. McClure, Yakima. Discussion opened by Dr. George Miller, Seattle.

### MEETING OF WASHINGTON HEALTH OFFICERS

The annual meeting of county health officers of Washington will be held at Olympic Hotel, Seattle, September 15-16, immediately preceding the meeting of the state medical association. The guests of the meeting will be Dr. Frederick Stricker, secretary of the Oregon State Board of Health, and Dr. H. E. Young of Victoria, Provincial health officer of British Columbia. They will read papers on topics pertaining to public health. Mr. Robert O. Jones, Executive Secretary of the Public Health League, will give an address on "Health Officers and the Public." There will be no other set papers, but round-table discussions will be held on matters pertaining to public health in Washington. According to the state law, each county bears the expense of sending its health officer to this annual meeting. Therefore, a full attendance will be anticipated. All physicians interested in public health matters are invited to attend this meeting and participate in the discussions.

#### NEW ADVERTISEMENTS

Attention is called to the following new advertisements appearing in this issue. H. G. Fischer & Co. announce the program and details of the Physiotherapeutic Convention in Chicago (page 16). Beverly Farm is presented, a home and school for backward children (page 19). The celebrated French Lick Springs Hotel Co. offers an announcement (page 19). Dr. Frank Shaw presents his X-Ray Laboratories (page 24).

## MEDICAL NOTES

**Pacific Northwest Orthopedic Association.** The orthopedic men of the Pacific Northwest met in Portland June 29, 1925, and formed the Pacific Northwest Orthopedic Association. The membership is limited to orthopedic men and the following are charter members: Drs. C. F. Eikenbary, Spokane; E. C. Carlson, Portland; L. N. Ossman, Salt Lake City; F. P. Patterson, Vancouver, B. C.

The following men were elected officers: Dr. E. A. Rich, president; Dr. Charles McClure, vice-President; Dr. Roger Anderson, secretary-treasurer. Dr. Nathaniel Allison of Boston was unanimously elected Godfather of the Orthopedic organization.

A banquet was held at the University Club, at which Dr. Nathaniel Allison gave the paper of the evening. The tentative plans for the meeting next summer will be a day of dry clinics at Spokane, to be followed by a meeting with the general medical men at Glacier National Park on the following three days.

**Tuberculosis Expert in Many Cities.** Dr. A. K. Krause, Professor of Medicine and Director of Tuberculosis Research at Johns Hopkins Hospital, has recently visited cities in Montana, Idaho, Oregon and Washington. He has delivered lectures before various medical societies, presenting the latest investigations in various phases of tuberculosis. He has also presented popular lectures before lay audiences, dealing with phases of this subject which are of importance and value to the average citizen. He received a warm welcome and was greeted by large audiences wherever he appeared.

**Physiotherapeutic Convention.** Physicians are invited to attend the Fourth Annual Physiotherapeutic Convention to be held at the Drake Hotel, Chicago, Oct. 12-16, 1925. Papers will be read and discussed by leading physicians of national and international reputation in this field. For particulars of program see page 16, in this issue. Demonstrations and exhibits of the latest apparatus and methods employed in physiotherapy will be given. Physicians who are in good standing with their State Medical Associations and can give evidence of that fact are invited. Reservations may be made and programs obtained by addressing the Educational Department of H. G. Fisher & Company, 2335 Wabansia Ave., Chicago, Ill.

**American Electrotherapeutic Association.** The American Electrotherapeutic Association will hold its 35th Annual Session Sept. 15-18 at the Hotel Drake, Chicago, Ill. Papers will be read by the leading men in the field of physical therapeutics and by invited guests of national reputation. A demonstration of actual technic of application of the various physical modalities will be given. There will be a complete exhibit of the latest electrotherapeutic apparatus and accessories. All legally licensed physicians are welcome and detailed program can be obtained by addressing Dr. Richard Kovacs, Secretary, 223 East 68 Street, New York City.

### OREGON

**Hospital to be Built.** The Sisters of Charity of the House of Providence will construct a new hospital in Astoria, a block of ground having been purchased for this purpose on a hill overlooking the city. The new building will contain one hundred and twenty-five rooms beside special departments and a nurse's home. It will cost \$400,000.

**Hospital Leased.** The new Lincoln Hospital, recently completed at Toledo, has been leased for five years to the Pacific Spruce Corporation, this company having been a heavy subscriber for its construction. It is located near the company's mill. The hospital is under the immediate care of Drs. F. M. Hellwarth and H. R. Kauffman.

**Hospital to be Remodeled.** Plans have been filed with the city building department of Portland for improvements in St. Vincent's Hospital to cost \$50,000. There will be extensive alterations in some of the upper floors, with instillation of fireproof roof and remodeling the nurses quarters.

**New Hospital to be Erected.** Plans are under consideration for the construction of a three-story hospital at Cottage Grove. The building will be planned for the business section, the first story being arranged for business houses, the second for offices for physicians and the third for a hospital with twenty-five to forty beds.

**Member of City Council.** Dr. A. B. Starbuck of Dallas has been elected a member of the city council of that city.

**Dr. W. G. Johnson,** who formerly practiced for nine years at Coin, Iowa, has recently located for practice at Freewater.

**Dr. L. C. Melvin,** formerly from Georgia, who has practiced for a number of years at Billings, Mont., has located for practice at Pilot Rock.

**Dr. Richard Thompson,** who has resided for some time at Portland, has located for practice at Grant's Pass.

**Dr. C. C. Campbell,** who has been stationed at the United States Veterans Hospital No. 77, at Portland, has been transferred to the government tuberculosis hospital at Walla Walla, Wash.

**Dr. P. T. Tweed,** who has practiced for some time at Lebanon, has located for practice at Albany.

**Dr. H. W. Steelhammer,** who has practiced for several years at Silverton, has located for practice at Portland.

### WASHINGTON

**Typhoid Still Exists.** Typhoid is still a factor among the diseases of this state. According to recent reports there were 435 cases during 1924, with 47 deaths. This was a marked improvement over 1923, when 547 cases, with 78 deaths, were reported. This decrease is attributed to precautions relative to water supplies over the state and a check placed on typhoid carriers. It is reported there are fourteen

known carriers in the state who are prohibited from handling food for sale or having anything to do with dairies.

**Sanitarium to be Improved.** The Mountain View Sanitarium, at Tacoma, will have improvements from funds included in the county budget for 1925. This will comprise new apparatus, new heating plant, laundry and larger quarters for patients. It is expected these improvements will result in rating the institution in Class A instead of Class B as at present.

**Tuberculosis Sanatorium Desired.** The Yakima county Anti-Tuberculosis League has requested the insertion of a half mill levy in the 1926 county budget for initial work in the construction of a fifty-bed sanatorium. It was stated that during 1924 there were fifty deaths in the county from this disease. According to the accepted ratio, this would imply four hundred and fifty patients seriously ill with this disease in the county.

**Chief of Hospital.** Dr. H. E. Antoine has been appointed medical officer in charge of U. S. Veterans Bureau at American Lake. Dr. M. L. Underwood has been appointed assistant medical officer.

**Superintendent Endorsed.** Last month there appeared in many of the papers accounts of an attack on Dr. David Livingstone, superintendent of the state hospital at Steilacoom, by a Pierce county legislator, charging brutal treatment of veterans who were patients of the institution, and other offenses which are usually included in similar charges against superintendents of state institutions. No confidence was placed in this attack by any of Dr. Livingstone's friends and acquaintances. The Tacoma post of the American Legion made a public reply to these charges, stating that there were no grounds whatever for these attacks on the superintendent.

**Hospital Staff Elected.** A staff has been selected for the Longview Hospital, now under construction, of which Dr. A. B. Shaw is chairman. This staff will act in an advisory capacity and the hospital will be open for all licensed physicians and their patients.

**Resigns from Office.** Dr. T. C. Barnhart, who has served for ten years as county physician and health officer in Spokane, has resigned that office and entered private practice. Dr. W. O. Wisner, who has been assistant county physician, will fill the office for the present.

**Dr. P. J. Scallon,** formerly of Coeur d'Alene, Ida., and recently in federal service at McNeil Island, has located for practice at Bellevue.

**Dr. M. B. Schneller,** who formerly practiced at Mott, N. D., has located for practice at Ritzville.

**Dr. John Darst,** who practiced for eight years in Whitman county, has located at Auburn.

**Dr. J. H. Harter** of Seattle has returned and resumed practice after a period spent in Europe in study and travel.

**County Physician Appointed.** Dr. W. M. Newman, of Spokane, deputy coroner, has been appointed county physician in place of Dr. T. C. Barnhart who recently resigned from that office.

**Dr. Emma M. Wickstrom**, who has practiced for some time in Portland, has moved to Alameda, California, where she will be permanently located.

**Dr. C. J. Johannesson**, of Walla Walla, has been appointed attending roentgenologist to United States Veterans Hospital No. 85 of that city.

**Dr. C. C. Tiffin** of Seattle has returned home after a period of study and travel in Europe.

**Dr. S. A. Keim**, recently of Chicago, has settled for practice in Wenatchee.

**Dr. A. L. Harnett**, who has conducted a hospital for the past five years at Big Lake, has located for practice at Mount Vernon.

**Dr. C. W. Lane**, who has practiced for thirteen years in Okanogan county, has located for practice at Wenatchee.

**Medical Wedding.** Dr. M. J. McClean, of Walla Walla, was married August 12 to Miss Velma Pierce at Hollywood, Calif.

#### IDAHO

**Hospital Renovated.** Improvements are being made at the barracks hospital, at Boise, which is now being used by the United States Veterans' Bureau. These improvements are to cost \$20,000. Some of the old buildings will be demolished and others placed in first class condition. There are at present one hundred and fourteen patients in the hospital, the number last winter being over two hundred. The improvements being made will increase the capacity to two hundred and thirty-five.

**Hospital Incorporated.** Articles of incorporation have been filed with the secretary of state for a community hospital at Malad.

**Officer Resigns.** Dr. F. W. Almond of Boise, who has served as state medical advisor since 1920, has tendered his resignation and will return to private practice. Under his supervision child hygiene and maternity work have been carried on in connection with the United States department of labor. Clinics were conducted in every county of the state with the examination of babies and instruction of mothers.

**Dr. L. J. Smith**, who has practiced during the past year at Troy, has located for practice at Kendrick.

#### MONTANA

**Hospital to be Established.** Dr. A. Conley, with other associates, has leased a building at Libby, known as the old hospital. A heating plant will be installed and other improvements made which will convert it into a modern hospital.

**Appointed Chief Surgeon of Hospital.** Dr. J. A. Everet, who has been chief surgeon of the Northern Pacific Hospital at St. Paul for several years, has been appointed chief surgeon in charge of the

Northern Pacific Hospital at Glendive. Dr. B. J. Derauf has been appointed surgical assistant and Dr. M. A. Shilington will be assistant to the chief surgeon.

**Dr. E. G. Steele**, who has practiced for the past four years at Los Angeles, previous to which time he was located for twelve years in Eastern Montana, has located for practice at Kalispell.

**Dr. D. T. Berg**, who has recently completed hospital intern work at St. Louis, has located for practice in Helena.

**Dr. C. J. Titus**, who has practiced for fourteen years at Great Falls, has moved to Sacramento, Calif., where he will practice in the future.

#### OBITUARIES

**Dr. James T. McCormac** of Marshfield, Ore., died at Berkley, Calif., July 25, after a prolonged illness, at the age of sixty-eight years. He was born in 1857 at Oregon City, Ore. His father being a missionary he lived in various states from the Atlantic to the Pacific. In 1877 he came to Coos Bay and taught school for three years. He graduated from medicine in 1882 and began practice at Marshfield. In later years he devoted much of his time to the logging business. For a number of years he was school supervisor for Coos county. He served also as school director of Marshfield, and for many years was president of its chamber of commerce.

**Dr. E. W. Garberich** of Spokane, Wash., died August 14, at the soldiers' home at Retsil, at the age of 83. He was born at Lebanon, Pa. He served in the Northern army as a youth and after his discharge studied medicine. He practiced for forty years in Pennsylvania and Des Moines, Iowa, locating in Spokane in 1904. For many years he conducted a pharmacy. He has been in failing health for a number of years.

#### MEDICAL TREATMENT OF PITUITARY NEOPLASM

It is the belief of I. H. Pardee, New York (Journal A. M. A., Aug. 15, 1925), that all pituitary neoplasms, whether large or merely hyperplasias, should be given the benefit of medical treatment, provided vision is not in immediate danger of becoming lost. First, glandular extracts should be used, especially pituitary and pituitary extract, and, as a later resort, roentgen-ray treatment. Many patients under this procedure will be saved from a major operation, the outcome of which is often problematic. The types of cases most likely to respond to the foregoing method are those of pituitary hyperplasia and adenoma, which are not of the destructive type and do not seem to be growing rapidly. These often show symptoms of glandular disturbances elsewhere and will often develop erosion and enlargement of the sella, chiasmal pressure and, perhaps, signs of pyramidal tract pressure. Hypophysial enlargements may be considered from two points of view, (1) a destructive rapidly growing neoplasm, and (2) benign adenomas, strumas or a hyperplastic state. Without question, the former type eventually needs operation; most of the latter are amenable to medical treatment, including glandular and radiotherapy, in the same manner that the thyroid is subject to similar medical therapy, surgical treatment being used when necessary.

## REPORTS OF SOCIETY MEETINGS

### MEDICAL ASSOCIATION OF MONTANA

MINUTES OF THE FORTY-SEVENTH ANNUAL MEETING OF MEDICAL ASSOCIATION OF MONTANA, JUNIOR HIGH SCHOOL, LEWISTOWN, MONT., JULY 8-9, 1925.

#### HOUSE OF DELEGATES

Wednesday, July 8, 12 m.

The forty-seventh annual meeting of the House of Delegates was called to order by President George McGrath of Hamilton. Credentials were presented.

Roll call: Big Horn: I. D. Nelson; Cascade: C. C. Albright, C. F. Coulter, E. D. Hitchcock; E. M. M. Socy.: R. H. Beach; Musselshell: C. T. Pigot; Park: S. E. Leard; Silver Bow: T. A. Grigg, A. Karsted, R. C. Monahan, M. J. Scott, R. B. Tracy; Yellowstone: E. M. Farr. In addition A. W. Deal, a member of the Council. There being no contests and a quorum present, the meeting was regularly opened.

The minutes of the previous meeting were read by the Secretary and approved as read.

The meeting adjourned to meet at 5 p. m.

The House of Delegates was called to order by President McGrath at 5 p. m.

Roll call: Big Horn: I. O. Nelson; Carbon: C. E. Beltzer; Cascade: C. C. Albright, E. D. Hitchcock; E. M. M. Socy: R. H. Beach; Fergus: T. H. Pleasants, J. Soltero; Gallatin: S. K. Campbell; Lewis & Clark: S. A. Cooney; Musselshell: C. T. Pigot; Park: S. E. Leard; Silver Bow: T. A. Grigg, R. C. Monahan, R. B. Tracy; Yellowstone: E. M. Farr, C. F. Watkins. In addition, E. M. Gans, a member of the Council was present.

The President announced the following committees:

Auditing: Gans, Beach, Hitchcock.

Nominations for the State Board of Health: Hitchcock, Campbell, Farr.

Place of Meeting: Leard, Grigg, Watkins.

Necrology: Scott, Tracy, Albright.

Northwest Medicine: Monahan, Coulter, Leard.

At the last annual meeting it was regularly moved and carried to amend Section 1 of Article 9 of the constitution. Proper notices were sent to the component societies and it is now in order to act upon the amendment which is as follows:

Section 1. The officers of this Association shall be a President, a President-Elect, a Vice-President, a Secretary-Treasurer and ten Councillors. Moved by E. M. Gans, that the amendment be adopted. Seconded, C. F. Watkins. Carried. It was necessary to make a few changes in other portions of the Constitution and By-laws.

Sec. 2, Art. 9. The President-Elect, the Vice-President, the Secretary-Treasurer shall be elected annually. Provided that at the annual meeting in July, 1925, a President also shall be elected. The term of each of the officers named above shall begin immediately upon the adjournment of the meeting at which he is elected. The President-Elect shall serve for two years, serving as President-Elect until the death, resignation, removal or expiration of the

term of office of the President, and thereafter serving as President. The President elected at the annual meeting July, 1925, the Vice-President, and the Secretary-Treasurer shall each serve for one year. Councillors shall be elected annually to fill such vacancies as may exist, to serve for three years each. All officers shall serve until their successors are elected and installed.

Amend the By-Laws, Chap. 3, Sec. 1, by striking out "one of the Vice-Presidents" and inserting "the Vice-President" in its place. Amend Chap. 4, Sec. 11, by striking out "Vice-Presidents" and inserting "Vice-President" in its place. Amend Chap. 6, Sec. 2. The Vice-President shall assist the President in the discharge of his duties. In event of the death, resignation or removal of the President and the President-Elect, the Vice-President shall become President and shall serve for the balance of the term for which the President-Elect would have served. It was moved by E. M. Gans that these amendments be adopted. Seconded, C. F. Watkins. Carried.

Dr. E. D. Hitchcock told of the prevalence of trachoma among the Indians on the Reservations in this state and that it was spreading and the number of cases increasing yearly. He moved that the President appoint a committee of three to investigate this subject, have power to act in the matter for the Association and to report at the next meeting. Seconded, R. B. Tracy. Carried. Committee appointed: W. F. Cogswell, C. F. Coulter and J. A. Donovan.

Dr. E. D. Hitchcock brought up the subject of the Aetna Group Malpractice Policy. There are now about one hundred and thirty members who have this form and as it is necessary to get two hundred he urged that more become actively interested in furthering the plan. He suggested that Mr. Givens, the Aetna representative of Great Falls, being present, be allowed the floor to bring the question again before the general assembly. Dr. R. C. Monahan moved that Mr. Givens be granted ten minutes to talk to the assembly. Seconded, T. A. Grigg. Discussed by Cooney, Monahan, Hitchcock, Deal and Gans. Motion was lost. Meeting adjourned to Thursday noon.

Thursday, July 9, 12 m.

The House of Delegates was called to order by President McGrath.

Roll call: Big Horn: I. D. Nelson; Cascade: C. F. Coulter, E. D. Hitchcock; E. M. M. Society: R. H. Beach; Gallatin: S. K. Campbell; Lewis & Clark: S. A. Cooney; W. M. M. Society: R. L. Owens; Musselshell: C. T. Pigot; Silver Bow: T. A. Grigg, R. C. Monahan, A. Karsted, M. J. Scott, R. B. Tracy; Yellowstone: E. M. Farr. In addition there were present Tom Walker, W. C. Woodward, H. E. Coe, E. M. Gans, F. F. Attix, A. W. Deal, D. J. Donohue.

A very fine report of the A. M. A. meeting was presented by Delegate C. T. Pigot.

Dr. E. M. Gans reported for the Auditing Committee that the books of the Secretary-Treasurer balanced and were in proper condition; and moved the adoption of the report. Seconded by S. K. Campbell. Carried.

Dr. T. A. Grigg reported for the Committee on

Place of Meeting. Glacier National Park, on the dates of the meeting of the Pacific Northwest Medical Association, was the selection of the committee. E. M. Gans moved the adoption of the report. Seconded, D. J. Donohue. Carried.

Dr. E. D. Hitchcock reported for the Committee on Nominations for the State Board of Health and submitted the following names to be recommended to the Governor of Montana: E. G. Balsam of Billings, M. D. Hoyt of Glasgow, J. C. Dunn of Lewiston, J. H. Garberson of Miles City, D. J. Donohue of Butte. Dr. Hitchcock moved the adoption of the report. Seconded, E. M. Farr. Carried.

Dr. M. J. Scott made the report for the Necrology Committee, in which special mention was made of our great loss through the death of Donald Campbell, one of our most regular attendants and active workers. C. T. Pigot moved the adoption of the report. Seconded, R. B. Tracy. Carried.

Dr. R. C. Monahan reported for the Committee on Northwest Medicine, the Association Journal. "That the Medical Association of Montana discontinue Northwest Medicine as the official Journal, and make arrangements to publish the proceedings of the 1925 session." A. W. Deal moved the adoption of the report. Seconded, S. A. Cooney. Discussion by Drs. Hitchcock, Tracy, Monahan, Scott, Pigot, H. E. Coe, Association Editor of the Journal. Motion lost.

Dr. R. C. Monahan read a clipping from the Lewiston Daily, in which he and Dr. D. J. Donohue were accused by Dr. R. J. Hathaway of unethical conduct, and requested that the Association take some action in the matter. The President told the session that the question was being handled in the proper method by the Council and that a report would be given later.

Dr. C. T. Pigot presented the following resolution:

WHEREAS, The war tax of three dollars under the Harrison Narcotic Law is an unjust discrimination against the medical profession;

WHEREAS, The tax on traveling expenses necessary for attendance at medical meetings is a tax on the acquisition of knowledge useful for the prevention of disease and relief of suffering, and is an unjust discrimination against the medical profession because traveling expenses incurred in the pursuit of a business or trade are not taxes;

WHEREAS, The tax on the expense of postgraduate study is unjust because manufacturers and merchants are allowed to deduct the cost of extending or renewing their current business resources, therefore be it

RESOLVED, by the Medical Association of Montana in convention assembled in Lewiston this ninth day of July, 1925, that we protest these taxes and ask relief from them and that copies of this resolution be sent the President of the United States, the Secretary of the Treasury, the Hon. Wm. R. Green, Chairman Committee on Ways and Means of the House of Representatives, and to the Montana Senators and Representatives.

Dr. R. L. Owens moved the adoption of the resolution. Seconded, M. J. Scott. Carried.

Dr. C. T. Pigot moved that a committee of three be appointed by the President to work with the State Board of Health and study the best way to handle the periodic health examinations and to present to

the next meeting a good plan for accomplishing this work in Montana. Seconded, R. B. Tracy. Carried.

Dr. D. J. Donohue moved that the election be done in the general assembly. Seconded, R. J. Tracy. Carried.

The meeting adjourned until 5 p. m.

#### Thursday, 5 p. m.

The House of Delegates was called to order by President McGrath.

Roll call: Big Horn: I. D. Nelson; Cascade: E. D. Hitchcock; E. M. M. Society: R. H. Beach. Fergus: J. Soltero, T. H. Pleasants; Gallatin: S. K. Campbell; Musselshell: C. T. Pigot; Silverbow: T. A. Grigg, A. Karsted, R. C. Monahan, M. J. Scott, R. B. Tracy; Yellowstone: E. M. Farr. In addition there were several members of the general assembly, as this meeting was called in the recess before the election.

"Tuesday evening Dr. R. J. Hathaway handed the Secretary a letter addressed to the officers and members of the Medical Association of Montana, in which he prefers charges of conspiracy, fraud and unethical conduct against Drs. D. J. Donohue and R. C. Monahan, and wishes action taken. This letter was given to the Council, according to our Constitution. The Councillors present at this session have met twice and now wish to report to the House of Delegates." (Remarks of the Secretary.)

Dr. E. D. Hitchcock, Chairman of the Council, presented the following report: "After due consideration of the letter of Dr. R. J. Hathaway of Glendive, accusing Dr. D. J. Donohue of Butte and Dr. R. C. Monahan of Butte of fraud, conspiracy and unethical conduct; after examining each and all of these doctors together; after considering portions of the transcript of the Hathaway-Kelly trial and letters; the Council concluded that Dr. R. J. Hathaway had no evidence to prove his charges against Dr. D. J. Donohue and Dr. R. C. Monahan and the Council considers them not guilty of the charges of fraud, conspiracy and unethical conduct." Signed, E. D. Hitchcock, R. H. Beach, A. W. Deal, E. M. Gans, E. G. Balsam, Secretary.

Dr. R. H. Beach moved to adjourn. Seconded, A. W. Deal. Carried.

The election of officers then occurred.

**President.** Dr. C. F. Watkins of Billings was nominated by Dr. L. W. Allard of Billings, who moved the nominations be closed and that the Secretary be instructed to cast the unanimous ballot of the Association for Dr. Watkins. Seconded by Dr. R. H. Beach of Glendive. Carried.

**President-Elect.** Dr. T. A. Grigg of Butte was nominated by Dr. R. B. Tracy of Butte; F. F. Attix of Lewiston was nominated by Dr. John Soltero of Moore. The ballot was, Grigg 14, Attix 20, and Dr. Attix was declared elected.

**Vice-President.** Dr. E. D. Hitchcock of Great Falls was nominated by Dr. R. H. Beach of Glendive, who also moved that the nominations be closed and that the Secretary be instructed to cast the unanimous ballot of the Association for Dr. Hitchcock. Seconded, Cogswell. Carried.

**Secretary-Treasurer.** Dr. E. G. Balsam of Billings was renominated by Dr. A. P. O'Leary of Big Timber, who moved that the nominations be closed and that the President cast the unanimous ballot of the Association for Dr. Balsam. Seconded, Donahue. Carried.

**Delegate.** Dr. C. T. Pigot of Roundup was nominated by Dr. W. F. Cogswell of Helena, who moved that the nominations be closed and that the Secretary be instructed to cast the unanimous ballot of the Association for Dr. Pigot. Seconded, Monahan. Carried.

**Alternate Delegate.** Dr. R. C. Monahan of Butte was nominated by Dr. D. J. Donahue of Butte, who moved that the nominations be closed and that the Secretary be instructed to cast the unanimous ballot of the Association for Dr. Monahan. Seconded, Graham. Carried.

**Councillors.** Drs. E. M. Gans of Judith Gap, W. H. Stephan of Dillon and J. H. Garberson of Miles City were renominated, and B. C. Brooks of Helena was nominated to replace Dr. E. D. Hitchcock, who was elected Vice-President, by Dr. R. C. Monahan of Butte, who moved the nominations be closed and the Secretary be instructed to cast the unanimous ballot of the Association for these councillors. Seconded, Owens. Carried.

The new President was conducted to the chair. The retiring President thanked the members for the honor they had conferred upon him and then, on behalf of the Association, thanked the Fergus County Medical Society, the individual doctors of Lewistown, and all the others who had made this session such a successful one. Miss Frances Sullivan, who presided at the registry, was remembered for her faithful attendance. The meeting adjourned.

E. G. BALSAM,  
Secretary-Treasurer

### SCIENTIFIC SESSIONS

Wednesday, July 8, 9:30 A. M.

The Forty-seventh Annual Meeting of the Medical Association of Montana was called to order in Lewiston, in the auditorium of the Junior High School, by the President, George McGrath, of Hamilton.

Mr. Perry F. Brown of the Lewiston Council, for Mayor Briscoe, made the Address of Welcome, to which, on behalf of the Association, Dr. Alfred Karsted of Butte responded.

The minutes of the previous annual meeting were read by the Secretary and approved as read.

The President called Vice-President T. A. Grigg of Butte to the chair and read the President's Address, which dealt with the value to the community of the general practitioner of medicine.

Dr. F. S. Bradley of Helena told of the work of the "Child Welfare Division of the State Board of Health." This was discussed by Drs. R. B. Tracy of Butte and W. F. Cogswell of Helena.

Dr. J. H. Garberson of Miles City presented "Thyroid Surgery," which was discussed by Drs. H. H. Parsons of Sidney, R. B. Tracy of Butte, T. A. Grigg of Butte and J. M. Garberson.

Dr. W. F. Cogswell of Helena made a few remarks

on "Tularemia," which has become quite prevalent in portions of the state. R. R. Parker, Ph D., of the U. S. P. H. S. Laboratory in Hamilton, presented a paper on the same subject. Discussion by Drs. J. H. Garberson of Miles City, T. A. Grigg of Butte and W. F. Cogswell of Helena.

Dr. R. B. Tracy of Butte read a paper on the "Mental Symptoms of Goiter."

Recess for lunch.

Wednesday, 2 P. M.

The meeting was called to order by the President, Geo. McGrath.

Dr. E. A. Welden of Lewiston presented "Thymic Enlargement," which was discussed by Dr. O'Leary of Big Timber.

Dr. Geo. W. Swift of Seattle told of "The Use of Air in the Diagnosis of Intracranial Lesions" and showed lantern slides of the cases. Talks on the subject were made by Dr. J. R. Sievers of Butte, R. B. Tracy of Butte, R. J. Hathaway of Glendive and Swift.

Dr. H. S. Plummer of Rochester, Minn., addressed the session on "The Diagnosis and Treatment of Exophthalmic Goiter."

The meeting adjourned.

In the evening a very enjoyable smoker was attended at the Country Club.

Thursday, 9 A. M.

The session was called to order by the President, Geo. McGrath.

R. R. Parker, Ph.D., discussed "The Recent Results of the Study of the Tick Virus of Rocky Mountain Spotted Fever."

Dr. M. J. Scott presented some of his "Recent Work on Cancer."

Dr. W. C. Woodward, Secretary of the Bureau of Legal Medicine and Legislation of the A. M. A., Chicago, presented "Malpractice Insurance."

Dr. John P. Lord, Professor of Orthopedic Surgery U. of Nebraska, described the "Treatment of Fractures" and showed lantern slides of his work.

Dr. H. E. Coe of Seattle discussed the "Hunter Operation in the Treatment of Little's Disease."

Recess for lunch.

Thursday, 2 P. M.

The President called the meeting to order.

Dr. H. W. Meyerding of Rochester, Minn., showed lantern slides of "Bone Tumors" and discussed them.

Dr. J. G. Parsons of Lewiston read a paper on "The Treatment of Frontal Sinusitis" and showed lantern slides.

A recess of ten minutes was taken and the session was called to order for the transaction of business.

The report of the Committee on the Place for the Next Meeting was read. It was decided to meet with the Northwest Pacific Medical Association in Glacier National Park, in 1926; to have our own business sessions and to join in the scientific sessions.

Meeting adjourned sine die.

## PACIFIC NORTHWEST MEDICAL ASSOCIATION

MINUTES OF THE MEETING OF THE COUNCILLORS OF PACIFIC NORTHWEST MEDICAL ASSOCIATION, MULTNOMAH HOTEL, PORTLAND, ORE., JUNE 28-JULY 1, 1925.

First Session June 28, 10:30 a. m.

Meeting was called to order by the Vice-President, Dr. J. L. Stewart.

Dr. Epplen, secretary, read the minutes of the previous meeting in abstract.

Roll call: Drs. N. W. Jones, Portland, Ore.; P. J. Bartle, Eugene, Ore.; J. R. Brown, Tacoma, Wash.; E. T. Richter, Spokane, Wash.; J. W. Gue, Caldwell, Ida.; F. F. Attix, Lewistown, Mont.; W. J. Marshall, Missoula, Mont.; B. D. Gillies, Vancouver, B. C.; J. E. Else, Portland, Ore.; H. D. Dudley, Seattle, Wash.; J. L. Stewart, Boise, Ida.; F. Epplen, Spokane, Wash.

Dr. Gillies reported for the president, Dr. A. S. Monro, that he was unable to be present because of illness. Dr. Gillies also read letters from Drs. L. S. McKid, and Geo. R. Peterson, expressing regret that they were not able to attend.

Dr. Else moved that a telegram be sent to Dr. Monro, expressing the sympathy of the Councillors at his inability to attend and hoping for a speedy recovery. Motion seconded and carried. So ordered.

Dr. Epplen read the secretary-treasurer's report in abstract. Dr. Else moved that the report be referred to the auditing committee. Regularly seconded and carried. So ordered. The chair appointed Drs. Dudley, Jones, and Larson on the auditing committee.

### Endowment Fund

Dr. N. W. Jones, chairman of the Endowment Fund Committee, reported. He stated that the object of the committee was to collect five thousand dollars for a working fund, for the handling of the fund program. The committee had extended to Oregon a quota of a thousand dollars. This has been practically raised and any small balance uncollected will soon be obtained.

Dr. Dudley reported on behalf of Washington. He stated that because of numerous drives in Seattle at about the time that he was requested to make the drive, it seemed inopportune for him to do so at that time. However, if at a later date the proposition were put before the physicians of Washington, he thought the quota of the thousand dollars might easily be raised. Dr. Epplen reported that he did nothing in Spokane, because of the inactivity in Seattle. He felt that nothing could be accomplished so long as the larger city in the state had not done anything.

Dr. Larson reported from Montana. His quota was five hundred dollars. He stated that on account of a drive in Montana to collect \$2,000 to get the next meeting to Glacier National Park in 1926, he decided that it was not best to attempt another drive at the same time, as the two would conflict. However, he

felt that if the matter were taken up at a later date that it would be successful.

Dr. Attix suggested that it might be well to approach the physicians in attendance at this meeting. Dr. Jones objected to this, stating that it had been easy to raise the money in Oregon and that as a matter of courtesy to the men in Oregon it would not be wise to approach the physicians in attendance as suggested, because it might give offense to some previous contributor, if he were solicited.

Dr. Else moved that a permanent committee be appointed to work on the fund until it is completed. Motion seconded and carried.

### General Arrangements

Dr. Else reported briefly for the General Arrangements Committee as follows: Drs. Watkins and Schauffler reported an unusually large exhibit, with \$800 earned by the Commercial division. The Scientific Exhibit was just as large and of equal interest. Dr. Bettman, as chairman of the Publicity Committee, has had articles in all large newspapers throughout the Northwest. He has also introduced a daily printed bulletin. The Ladies' Committee has provided entertainment for Tuesday and Wednesday. There will be two dinners given on Sunday evening, preceding the meeting. One for the councillors, guests, members of the local committee, and secretaries for the speakers, and another for the ladies. Arrangements have been made for a meeting of the Urological Society with a dinner on Monday evening. There will be a dinner for the entire attendance on Wednesday evening, the last day of the session. The report was duly accepted.

The chair appointed a nominating committee composed of Drs. J. W. Gue, P. J. Bartle, E. T. Richter, F. F. Attix and B. D. Gillies. Dr. Else suggested that hereafter the first Vice-President be not necessarily in line for the presidency, so that the honors might be more widely distributed over the territory of the association.

Dr. Dudley moved that a telegram of sympathy be sent to Drs. Storrs, and Cumming, who are absent because of illness and that the same also be sent to Dr. Alexander S. Monro. The following telegram was sent: "On behalf of the Pacific Northwest Medical Association I extend to you their sympathy and wishes for an early and complete recovery from your ailments and wish to express their regret at your absence."

Dr. Attix moved that a letter of condolence be sent to the widow of Dr. Donald Campbell, who passed away of February 25, 1925. The following letter was sent: "On behalf of the Councillors of the Pacific Northwest Medical Association, of whom your late husband was a member, I wish to extend to you the sympathy of this body now in session. We, who knew him so well, and knew his worth in the professional way, can understand the depth of your bereavement."

Adjournment until five o'clock this afternoon.

Second Session June 28, 5 p. m.

Meeting called to order by Dr. J. L. Stewart.

Roll call: Drs. F. F. Attix, Lewistown, Mont.; J. Earl Else, Portland, Ore.; H. D. Dudley, Seattle, Wash.; B. D. Gillies, Vancouver, B. C.; E. T. Richter, Spokane, Wash.; W. J. Marshall, Missoula, Mont.; E. M. Larson, Great Falls, Mont.; J. W. Gue, Caldwell, Ida.; P. J. Bartle, Eugene, Ore.; J. R. Brown, Tacoma, Wash.; J. L. Stewart, Boise, Ida.

#### Nominations

Dr. Attix read the following report of the nominating committee: Dr. James L. Stewart of Boise, Idaho, was nominated President-Elect by Dr. Gillies. Seconded by Dr. Bartle. No further nominations. Carried.

Dr. H. J. Davidson of Seattle was nominated as First Vice-President by Dr. Bartle, seconded by Dr. Richter. No further nominations. Carried.

Dr. C. H. Vrooman of Vancouver, B. C., was nominated for Second Vice-President by Dr. Gillies, seconded by Dr. Bartle. Carried. No further nominations.

Dr. Frederick Epplen of Spokane was nominated by Dr. Richter to succeed himself as Secretary-Treasurer, seconded by Dr. Bartle. Carried.

#### OREGON

Dr. J. Earl Else was nominated for the 1928 Councillor from Oregon by Dr. Bartle and seconded by Dr. Richter. Carried.

#### WASHINGTON

Dr. J. R. Brown of Tacoma was nominated as 1928 Councillor for Washington by Dr. Gillies, and seconded by Dr. Bartle.

#### IDAHO

Dr. L. Chilton of Boise was nominated for the 1928 Councillor for Idaho by Dr. Bartle and seconded by Dr. Ritchie. Carried. Dr. Geo. M. Proctor, Nampa, was nominated to fill the vacancy created by the removal from Idaho of Dr. L. P. McCalla.

#### MONTANA

Dr. Alfred Karstad of Butte was nominated by Dr. Attix for the 1928 Councillor for Montana. Seconded by Dr. Bartle. Carried.

#### BRITISH COLUMBIA

Dr. Storrs was nominated as the 1928 Councillor for British Columbia by Dr. Gillis. Seconded by Dr. Ritchie. Carried.

#### UTAH

Dr. Jos. R. Morrell was nominated by Dr. Bartle as the 1928 Councillor from Utah. Seconded by Dr. Ritchie. Carried.

The committee is not able to make nominations at this time for Saskatchewan and Alberta.

It was regularly moved and seconded that the report of the committee be adopted. Dr. Gillies made an amendment that he, in conjunction with Drs. H. R. Storrs and A. S. Monro, be authorized to make a survey of the possible candidates from the Canadian provinces and present the best candidates for these provinces that were not in attendance at this meeting, and to report to the secretary within one month. Duly accepted and carried. It was then moved that the entire recommendations of the committee be submitted to the general session on Wednesday morning at 11 o'clock. So ordered.

#### Auditing Committee

Dr. Dudley read the following report of the auditing committee:

"Councillors of the Pacific Northwest Medical Association,

Gentlemen:

"The undersigned committee has reviewed the invoices for expenses incurred by the Secretary-Treasurer as given in his report of this date.

"We find the accounts reviewed to warrant expenditures in connection with his office."

Respectfully submitted,

(Signed)

DR. H. D. DUDLEY,

DR. N. W. JONES,

DR. E. M. LARSON.

#### Members at Large

Dr. Epplen suggested that there should be several members at large of the Council, stating that he felt that the government of the Association was somewhat too highly centralized and that various men who had rendered valuable services to the Association were not represented. Dr. Else objected, saying that this would give the larger states a greater representation than the smaller ones. The councillors being elected by the General Assembly, it would eliminate all possibility of any objections to the present form of government of the Association. Dr. Marshall agreed with Dr. Else that the committee had served very well as it now stands. Dr. Gue agreed. Dr. John H. Brown defined the councillors as a "cabinet" who felt that it should not be too large and that no benefit could be derived at the present time by enlarging the same. Dr. Marshall suggested that the matter be left as it now stands for a year or two before any further provision be made.

Dr. Else made a motion that an addition be made to the By-Laws, providing for patrons of the Association. The provision in the By-Laws to read as follows: "Any person contributing to the endowment fund of the Association shall be enrolled as a patron but shall not be entitled to any special privileges by reason hereof." Amendment to the By-Laws must be laid upon the table until the next day. It was so ordered.

Dr. H. D. Dudley moved that the secretary's salary of \$300 per year be continued for the next tenure of office. Motion seconded and carried. Dr. Gue moved that the motion be reconsidered. Seconded and carried. Dr. Gue then moved that the salary of the secretary be paid \$500 per year for the tenure of his office. Seconded and carried. So ordered.

Motion to adjourn until immediately after session Monday afternoon, as then seems most expedient. Carried.

Third Session June 29, 5 p. m.

The meeting was called to order by Vice-President James L. Stewart. Those present were: Drs. H. D. Dudley, Seattle, Wash.; W. J. Marshall, Missoula, Mont.; E. A. Sommer, Portland, Ore.; E. M. Larson, Great Falls, Mont.; F. F. Attix, Lewistown, Mont.; J. R. Brown, Tacoma, Wash.; P. J. Bartle, Eugene,

Ore.; J. W. Gue, Caldwell, Ida.; J. Earl Else, Portland, Ore.; James L. Stewart, Boise, Ida.; J. E. Tyree, Salt Lake City, Utah; Frederick Epplen, Spokane.

On behalf of the Montana delegation, an invitation was extended to the Pacific Northwest Medical Association by Dr. E. M. Larson that it meet on or about June 15, 1926, at the Glacier Park Hotel, Glacier National Park, Mont. Duly seconded motion to accept the invitation was carried. So ordered.

#### Amendment to By-Laws

The amendment to the By-Laws regarding patrons was taken from the table for consideration. It was moved by Dr. Epplen and seconded by Dr. Jones that the last clause, viz., "but shall not be entitled to any privileges by reason thereof" be eliminated. The amendment was thereupon passed to read as follows: "Any person contributing to the endowment fund of the Association shall be enrolled as a patron."

#### Affiliated Societies

A short discussion in regard to the organization of the North Pacific Orthopedic Association resulted in a motion which was seconded and passed that Dr. Dudley be authorized to report to the temporary president of the North Pacific Orthopedic Association that affiliation with the Pacific Northwest Medical Association would be possible. The annual dues of the Pacific Northwest Medical Association are to cover all charges except such special assessments as will be made by the North Pacific Orthopedic Society itself and that the Pacific Northwest Medical Association would pay the expenses of the speaker brought from a distance and would pay for the rental of the room for meetings of the North Pacific Orthopedic Society, when held in connection with the Pacific Northwest Medical Association.

Motion to adjourn until Wednesday noon.

Fourth Session July 1, 12 m.

The meeting was called to order by Dr. James L. Stewart.

Roll call: Drs. E. T. Richter, Spokane, Wash.; N. W. Jones, Portland, Ore.; B. D. Gillies, Vancouver, B. C.; E. M. Larson, Great Falls, Mont.; J. Earl Else, Portland, Ore.; J. W. Marshall, Missoula, Mont.; F. F. Attix, Lewistown, Mont.; J. R. Brown, Tacoma, Wash.; Frederick Epplen, Spokane, Wash.

Moved by Dr. Jones that the Secretary-Treasurer be empowered to sign checks without counter-signature. Seconded and carried. So ordered.

Moved by Dr. J. Earl Else that the Medical Sentinel be given permission to publish an official notebook each year. The notebook may carry items of interest, but is not to contain the program or advertising.

Motion to adjourn sine die. Carried.

#### GENERAL SESSION OF THE PACIFIC NORTHWEST MEDICAL ASSOCIATION JULY 1, 11 A. M.

The following candidates are submitted for various offices to the General Session by the Secretary-Treasurer, F. Epplen. President Stewart called for addition nominations.

President-Elect, Dr. J. L. Stewart, Boise, Ida.  
First Vice-President, Dr. H. J. Davidson, Seattle, Wash.

Second Vice-President, Dr. C. H. Vrooman, Vancouver, B. C.

Secretary-Treasurer, Dr. Frederick Epplen, Spokane, Wash.

#### OREGON

1928 Councillor, Dr. J. Earle Else, Portland, Ore.

#### WASHINGTON

1928 Councillor, Dr. J. R. Brown, Tacoma, Wash.

#### IDAHO

1928 Councillor, Dr. L. Chilton, Boise, Ida. Dr. George M. Procter nominated Councillor for Idaho to fill the unexpired term of Dr. J. P. McCalla who has removed from the state.

#### MONTANA

1928 Councillor, Dr. Alfred Karstad, Butte, Mont.

#### BRITISH COLUMBIA

1928 Councillor, Dr. Storrs, Vancouver, B. C.

#### UTAH

1928 Councillor, Dr. Jos R. Morrell, Ogden, Utah.

It was moved by Dr. C. A. Smith and seconded by many voices that these submitted names be declared elected. The motion carried unanimously. So ordered.

#### PROGRAM AT THE BANQUET, JULY 1, 8 P. M.

Installation of President-Elect E. M. Larson as President by Vice-President J. L. Stewart. Presentation of President-Elect, Dr. L. J. Stewart; first Vice-President Dr. H. J. Davidson, second Vice-President C. H. Vrooman and Secretary-Treasurer, Dr. Frederick Epplen.

Address by Dr. Lewellys F. Barker, "Osler's Influence on Medicine in North America."

Address by Sir Henry M. W. Gray, "The Influence of the Great War upon Surgery among the English Speaking People."

Adjournment sine die.

#### PACIFIC NORTHWEST MEDICAL ASSOCIATION

#### MINUTES OF SCIENTIFIC SESSIONS OF PACIFIC NORTHWEST MEDICAL ASSOCIATION, PORTLAND, ORE., JUNE 29-JULY 1, 1925.

The meeting was called to order by President-Elect Dr. E. M. Larson, Monday June 29, at 9 a. m. The program of scientific papers was carried out as published, abstracts of which are hereby presented:

PHYSIOLOGY OF THE SUPRARENAL GLANDS  
Dr. George N. Stewart, of Western Reserve University Medical School, Cleveland, Ohio, delivered this address.

The suprarenal consists of two glands, the cortex and the medulla. This has led to many errors, as the two glands are very different from each other, having neither origin nor function in common. The medulla is important, as it produces epinephrin. It is of vast importance to keep well in mind the difference between adrenalin in a bottle and the drug from the gland. Not doing so has led to many errors.

In the laboratory animals the suprarenals are

called the adrenals. Dr. Stewart has not produced anything of importance because he has found that an animal can live indefinitely without the adrenal and without any noticeable effect. By removing the medulla or by cutting the splanchnic nerves, the flow of epinephrin is stopped. There is no change in the general metabolism, the blood pressure or the emotions in the animals. Thus it is proven that the medulla is not indispensable to life, at least in animals. The important thing is that the large quantities that are introduced into the body can produce effects and that has led to errors.

Adrenalin is the only drug which can be measured in the blood stream, that is, the only product of an endocrine gland which can be detected and its action followed in the blood stream. A dilution of 1-20,000,000 can be detected. It has been found that the amount of epinephrin given off is remarkably constant, being for the average adult male about one ounce per twenty-four hours. This is coming off all the time and it may be a poison which is kept down to a low level or it may be of some use.

Not much is known about the cortex because it is not known what it produces. Some have thought that it destroys poisons; other that it produces hormones. It is not known which the cortex does or if it does both. It may be that epinephrin is the end-product, as the blood unites the medulla and the cortex. To remove the cortex, it is necessary to remove also the medulla. The results of such procedure have been contradictory, probably due to bad surgery. Different strains of animals have different results. Rats can live indefinitely, are bred and produce normal rats. Dogs live from 6 to 14 days but always die. After they have recovered from the operation, they are perfectly normal but in a few days suddenly refuse food and die in a few hours. Anorexia is the most characteristic symptom, generally accompanied by asthenia. Before death, there is some blood in the stool and vomitus. Autopsy reveals a marked congestion in some part of the gastrointestinal tract, the mucosa hemorrhagic and blood and blood pigment in the lumen. This has probably coincided with the anorexia. Pancreatitis accompanies this and is often highly congested. The changes may be due to chemical or motor disturbances in the gastrointestinal tract. There is a profound intoxication and life is prolonged by washing the mucosa with large quantities of water or by Ringer's solution and dextrose being given intravenously.

This was tried on a patient having the typical symptoms of Addison's disease and the results were identical with those obtained with an injection of adrenalin. Dr. Stewart does not believe that the suprarenals are connected with Addison's disease as this has never been produced in animals. And if these glands are involved, they do not tell the whole story, but are merely part of the complex.

#### ANGINA PECTORIS

This paper was read by Dr. James B. Herrick, Professor and Head of the Department of Medicine, Rush Medical College, Chicago. It was published in full in *Northwest Medicine*, page 360, Aug. 1925

#### PSYCHIC FACTORS IN GENERAL MEDICAL DIAGNOSIS

This paper was read by Dr. Lewellys F. Barker, Professor of Clinical Medicine, Johns Hopkins University Medical School, Baltimore. It is published in full on page 407 of this issue.

#### THE USE AND ABUSE OF CLINICAL SIGNS IN CARDIOLOGIC PRACTICE

Dr. Alan N. Drury, Honorary Assistant Cardiac Department, University College Hospital, London, Eng., delivered this address.

A patient presents himself for examination and he looks like a cardiac case, his history is indefinite. The chief method used by Sir Thomas Lewis is an examination with only the unaided senses. In the large clinics of war pensioners, where the cases can be followed very closely, it was found that the conclusions thus obtained were sound and this simple method is good.

The first question is whether the case is one of cardiac failure of the congestive type or whether it is not. If cardiac failure is present with ascites and a faulty urinary output, the case is easily recognized. But the cases of borderline cardiac failure do not have the marked symptoms and are not recognized. When the heart fails, the right heart dilates and the pressure is above normal. So in a normal person the neck veins are collapsed and only when lying down do these veins pulsate. However, in borderline failure, when the head is propped up, these veins will still be full. In such cases there is likewise an early involvement of the liver. It may be enlarged but oftener there is a slight tenderness over the liver and moist places will be found in the lungs.

The next question is the size of the heart. An enlarged heart is unhealthy, but all hearts, normal in size, are not healthy. The greater the enlargement of the heart, the more pathology is present. The maximal impulse is a small impulse, covering a small area and having a definite character. It is a thrusting impulse. The finger is held against the chest wall and is moved where the impulse is felt. This is a definite sign of the heart size. In a diffuse impulse, the maximal impulse can still be picked up. Another point is the movement of the ribs. If a large heart is present, systole involves the ribs and the rib spaces, and they are lifted. If the point of maximal impulse is in the fifth space and off to the side of the nipple line, the heart is definitely enlarged. The maximal impulse is an index of the heart's size, if the organ is not grossly displaced. Percussion may not be of any great value except to show that the heart is displaced. If you are trying to get the left limit of the heart, all that is obtained is hypertrophy of the left ventricle. If the percussion dulness does not correspond to the point of maximal intensity, it is better to rely on the later. The right border line of the heart is difficult to get. If the right auricle is enlarged, evidence is obtained by the engorgement of the neck veins as previously stated.

The heart sounds as a group are not of much use. They are evidence of myocardial trouble unless other evidence occurs. Very little attention should be paid to the heart sounds, except that they direct attention to the heart itself. If disease has affected the heart valves, it has also affected the heart muscle and it is necessary to know the condition of the heart muscle; therefore, study the heart valves. It is essential to know which murmurs to discard and which to keep.

The commonest murmur is the cardiac systolic murmur, which is a short whiff, best heard at inspiration and is probably a broken up breath sound, for it disappears when the breath is held. This may occur in a slow heart as well as in a normal heart. The systolic over the pulmonary valve murmur has no prognostic significance but it makes the examiner feel the heart base for thrills. Such a murmur should not be diagnosed as pulmonary stenosis, unless there is an associated pulmonary cyanosis which is either permanent or transient. A murmur of systole and diastole indicates a patent ductus arteriosus. This is not important but may mask pulmonary stenosis.

An aortic systolic murmur is not prognostically significant but it makes the observer feel the base of the heart for thrills. It is not sufficient for diagnosis or aortic stenosis. This condition is rare and search should be made for aortic regurgitation. An apical systolic murmur is most often found when the patient is in one position and may be transient but is not important.

Mitral stenosis produces a systolic murmur which is variable in occurrence, type and induction. But it is necessary to say whether mitral regurgitation is due to a relaxed ring or to mitral disease. Tricuspid systolic murmur is likely to occur in a healthy heart, for the ring is prone to contract.

With aortic regurgitation there is a water-hammer pulse and a diastolic murmur. The observer must rely on the diastolic murmur at the base which is best heard down the left side of the sternum at first and later moves over to the right. There should be no hesitation to make a diagnosis when this is present.

Mitral stenosis should not be diagnosed except in the absence of a diastolic thrill. An accentuated first sound is insufficient, even with a history of rheumatic fever. It is necessary to have a diastolic rumble. In many cases of heart strain, the murmur is only brought out when the heart rate is raised and the patient on the left side. Therefore, if there is a suspicion of this condition, put the patient on his left side and exercise. It is easy to pick out the diastolic rumble which is definite and easy to appreciate. A systolic murmur of the apex is of no value in itself but causes a search for mitral stenosis.

The rhythm of the heart is the next question of importance. Usually an arrhythmia means a damaged heart. If it is a bradycardia, it may be physiologic but it may be associated with complete heart block which is evidence of an unhealthy heart. A disease which affects the bundle of His must affect

the rest of the heart. The auricles and ventricles may have different rates. An occasional intensified sound is good evidence of this, for it occurs when the auricle and ventricle go off together.

It is essential to separate the irregularities of the normal heart from the irregularities of the heart with an auricular fibrillation. If the heart rate is raised to a rate of 120, the rhythm is regular, there is an auricular fibrillation. But if the heart continues to beat irregularly above that rate, the condition is not auricular fibrillation.

If the examiner merely wishes to know whether he has a healthy heart or one which is enlarged or is a case of cardiac failure or has valvular disease, then the galvonometer will add nothing to the knowledge obtained from his senses except confirmation. But if help is wished for in auricular flutter or heart block, the machine will give help in about 50 per cent of the cases. If the case is one of bundle branch block, in which merely one branch is blocked and it can be gotten at from the clinical point of view, the galvonometer will aid.

Clinicians are losing sight of fact that little is known about the T-wave except that it can be reversed by drugs. It varies in point from time to time and bears little relation to the heart and a physician should hesitate before consigning a patient to a life of inactivity because of an abnormal T-wave. Wait until more is known about it.

Simple signs will give as good results as the use of instruments. Too much emphasis has been laid upon these. In the majority of cases, it is necessary to rely on the senses. The man who has a machine should use it to abolish the use of the machine, in looking for signs of the sense which are confirmed by the machine.

#### ACUTE INTESTINAL OBSTRUCTION

Sir Henry M. W. Gray, Surgeon-in-Chief, Royal Victoria Hospital, Montreal, delivered this address.

Early surgical treatment has convinced most men of the benefit derived in such cases of acute intestinal obstruction. These cases seem to be increasing in late years. One factor may be the more frequent abdominal operations. All cases are urgent, some are greater than others. This depends also on the age and resistance of the patient. Some who are weak succumb to the shock. The more robust combat the toxemia better.

A slight kink or constriction may cause partial obstruction at first, but soon this gets to be a complete occlusion. The degree of obstruction of the blood supply and lymphatics causes marked degrees of gangrene. In other cases the congestion causes the obstruction to become tighter. The thrombotic symptoms are similar.

If the symptoms of vomiting appear early, the obstruction is high. If vomiting appears later, the obstruction is down in the gut. Surgical relief must be varied according to whether the case is early or late. The age of the patient may help in the diagnosis. In infants, more often one finds intussusception. This is probably caused by improper feeding;

also in the child the equilibrium of the bowel is not so well developed as in the adult. In early stages the symptoms may differ and be absent between pains. Later there is gangrene and severe symptoms. Intussusception in older children or adults is usually caused in part by conditions, such as polyps, etc. In adults it is comparatively rare and the surgeon is more concerned with hernia, concretions, extra or intraintestinal tumors, chronic or recent adhesions or volvulus.

In inflammatory cases the symptoms of inflammation may mask the symptoms of obstruction. Ileus may occur in any operation but it is more apt to appear after excessive handling of the gut. However, the bowel usually recovers, but strong purgatives in this condition do harm. Peritonitis usually affects the lower bowel; both large and small may be affected and both must be treated. In such cases there is a strong stagnation of toxins within the bowel. Unless one or more enterostomies are made the patient will surely die. The poisons from the upper bowel influence metabolic changes and the toxic products may be demonstrated in the blood. There may be nephritis with changes in the urine which become normal when the obstruction is relieved.

Certain phenomena are invariably found. If a loop is strangulated, there is a sudden shock. Following this there may be a more or less calm, but usually there is some pain over the abdomen. Usually, there are spasms of great pain and are more severe if in the small than if in the large bowel. There are frequently seen some symptoms days and weeks ahead. Vomiting usually is the first symptom and is forceful and pump-like. There is an early need for high enterostomy. Pain follows the vomiting, and may be colicky or persistent. A tumor mass may develop before the general distention. Pressure aggravates the pain. Distention occurs later in the colon or rectum than if in the small intestine, because if the small intestine is obstructed, there is the production of gas quicker than in the large bowel and is combined with exudate and undigested food. The undigested protein contributes largely to the toxemia. Constipation is usually absolute after the bowel has once emptied. Purgatives increase the colic and cause more violent vomiting. An enema will not relieve the pain or the colic.

At this stage there is liable to be paralysis of the bowel. To prevent this early enterostomy is necessary. A patch may become gangrenous and later perforate. The picture of the patient in this stage is very bad. Some call it a secondary organic shock and the end may come very rapidly. The amount of pain varies with different people and the symptoms may vary, but at operation the findings are usually the same.

Early operation is the important treatment in all cases of obstruction. The above mentioned lulls may lead to delay in operation. There is usually so great an urgency that one does a great mistake in waiting for confirmation, laboratory findings, such as blood and urine tests. Enterostomy is very important. It has been noticed that an overdistended

and active bowel will recover, while an overdistended but inert bowel should be excised.

Accessory procedure: If there is much vomiting, wash out the stomach before giving the anesthetic, to avoid aspiration pneumonia. Spinal anesthesia does not prevent this vomiting. Restore the body fluids as far as possible. The chlorides of the blood have been found to be diminished. Saline given subcutaneously, by rectum, intravenously, etc., is quickly absorbed. Food is given as soon as the patient desires it. This promotes persistalsis which helps to prevent adhesions.

Actual operative procedure: A long incision, at least six inches, one inch from the mid-line is used. Novocaine, 5 per cent solution, is injected to cut down the length of the general anesthetic used. A short gas and oxygen anesthetic does not harm the patient. When the abdomen is opened, do not allow the bowel to protrude and become cool. Moist warm packs are used to protect the bowel. The relief of the obstruction may vary from the snipping of an adhesive band to an end-to-end anastomosis of gangrenous loops.

When to make an enterostomy: If the patient has had strong colicky pains up to the operation and responds to local stimulation, may not do an enterostomy. When in doubt, it is performed. In multiple enterostomies one tube at a time is removed, which gives the bowel a better chance to recover.

The color of the bowel is very confusing, as there are all gradations. The peritoneum is incised and the superficial layers of the intestine examined. Gauze is applied to the incised peritoneum and, if it is stained with fresh blood or fresh blood oozes out, we can be certain of viability. In respect to drains, the abdomen is usually not drained. The pelvis is wiped out with a dry gauze. Far better results are thus obtained by this simple method than in cases that have been drained.

#### MANAGEMENT OF SMALL STONES IN KIDNEY AND URETER

Dr. Hugh Cabot, Professor of Surgery, University of Michigan Medical School, Ann Arbor, read this paper.

The question to be discussed is the management of small kidney stones; the large kidney stones will not be discussed. There is a fairly numerous group of individuals with a stone in the kidney which is not objectionable. An example of this was a child who proved to have a moderate sized stone in the kidney. After sixteen years this same boy returned to the hospital with pneumonia and died. Autopsy revealed that the stone was in the same place as at earlier examination and had caused no trouble in all those years.

The time to interfere is when the stone is in the ureter and has done something objectionable. The stone may damage the kidney and it may create bad conditions in this organ. In the genitourinary tract retention is necessary to infection. The stone may cause this essential groundwork, but the stone must prove this. Three problems present themselves in

such cases. (1) Is the stone present? If so, prove it. Only twenty per cent of patients show typical symptoms. (2) Is the stone objectionable? Unless it is troublesome it is entitled to kindness. (3) One must decide what method is suited to the management of the stone. Within the last fifteen years there has been a 60 per cent diminution in the surgical treatment of such cases.

When a stone is found in the ureter, there should be no presumption that the stone is passing out. It may go either way, as reverse peristalsis takes place in the ureter. However, there is no presumption that a large stone will not pass. Surprisingly large ones will, and have done so. Children are less able to pass stones than adults. The commonest point for a stone in a ureter is where the iliac artery crosses the ureter and the most troublesome cases are those where the stone sticks at the bifurcation of the iliac artery. When the stone is fixed, the ureter usually dilates above and below it. There is no rule for the amount of damage which stones of varying size will cause. A very large stone in the ureter may produce hardly any damage to the kidney, while a stone which should cause little trouble shows a large amount.

There are three methods to handle such stones. It can be left alone. Manipulation can be tried or the physician can declare war on it. Now the declaration of war is only resorted to in one-third of the cases. By means of the cystoscope and the x-ray, the stone can be watched and can be shown whether it is moving or if it sticks. If it is moving, there is no reason to interfere, unless the patient is suffering extreme pain. The introduction of the catheter is less severe than renal colic, so if the stone fails to move, then use the cystoscope and catheter. Prod the stone and it will either move or the instrument passes it. The benefit from manipulation is questionable. A local anesthetic and oil do have additional effects with this form of treatment.

Lately there have been many ingenious devices for bringing down of stones. In the hands of some operators these have been used with success, but Dr. Cabot finds them no good in his own hands and has been troubled with getting them out. The only device which is of value is to dilate the ureter with scissors. The high frequency machine has been used but it is likely to burn the orifices.

Today, a large number of stones, upon which surgeons used to operate, can be let go. The question of how long to let them go depends upon the case. If the patient has severe pain, operate. But if the pain is mild and he is a busy man and does not wish to take the time for an operation, let it go unless infection supervenes. Then the stone must come out.

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#### THE DIAGNOSIS OF KNEE JOINT DISEASES

Dr. Nathaniel Allison, Professor of Orthopedic Surgery, Harvard University Medical School, Boston, read this paper.

A plea is made for an earlier and more accurate diagnosis of affected joints. Usually no attention is paid to a joint until one or several become painful.

Joint disease may be temporary, lasting or it may take away life.

To understand joint disease, one must have a thorough knowledge of the anatomy of the part. Many joint diseases have only one outcome, destruction. The natural sequence seems to be a stiff joint which will bear weight. Early diagnosis is all important in order to interrupt the muscular sequence of events and to reestablish muscular function. Lack of accuracy in diagnosis has been very important in the number of cripples suffering today from joint disease.

Unless we are certain of the cause of joint disease, all our observations are of little value. Especially is this true in chronic arthritides or arthritis deformans. The thing to know is the etiologic factor. Clark, in a series of eleven hundred consecutive autopsies, found that sixteen per cent had lesions of the joint and that only one per cent had complained.

Joints are composed of the spongy ends of bone with no periosteum or endosteum, so that is poor material for repair and does not have the same elements that are present when a piece of bone is broken off. The cartilage on the ends of the bones is the most important feature in joint structure. The peculiar structure of hyaline cartilage is not found like fibrocartilage, in that it has no power of repair. One must realize that difference from fibrocartilage, which has the power of repair. The semilunar cartilage of the knee and the numerous other fibrocartilage buffers within the joints are of different structure. The nourishment of hyaline cartilage is little understood. It has always been a subject of great interest and commonly thought to be derived from the synovial fluid.

The synovial fluids constitute an oiling system for our joints. The membranes are continuous with the outer margins of the hyaline cartilage and become thinner as it approaches the joint borders and remains thick in the joint cavity. The physiology of the synovial membrane is not understood. The oiling system may be compared with a machine which oils under pressure.

Treatment of cases of joint cases can result, unless the cause is known, in very little improvement. Those cases, in which there has been a known etiology and the onset discovered early, have been treated very satisfactorily. Many of the conditions are purely due to the wear and tear and later recover. Ankylosis is nature's method of taking care of any condition, in which the synovial membrane is destroyed. Tuberculosis of the synovial membrane may be found in the old adult as well as in the child. It is very often mistaken for other diseased conditions. X-ray findings in joint disease often confuse the examiner and clinical findings are the greatest importance in diagnosis of joint disease.

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#### THE IMPORTANCE OF A ROUTINE WASSERMANN TEST IN PRIVATE PRACTICE

This paper was read by Dr. Reginald Fitz, Associate Professor of Medicine, Harvard University Medical School, Boston.

How prevalent is syphilis in general practice? This is a difficult question to get at and it differs with different communities. In a series of cases at Peter Bent Brigham Hospital, Boston, the positive Wassermann was found in fifteen per cent of the cases. This series was composed of 350 cases, taken from patients of all ages and all conditions of ordinary diseases.

Numerous people are willing to pay physicians for a thorough examination but they do not receive it. The Wassermann is one of the simplest laboratory tests and give information of great value. For this reason, a routine Wassermann should be run on all patients. A negative test does not exclude syphilis but a strongly positive one is a strong indication of the disease, as it is found in 80 per cent of such cases. Naturally the clinical history must be taken into consideration. Serologists lay little stress on the role of acute infections in returning a positive test. Respiratory infections, especially, give a positive Wassermann. Ether or chloroform may give a temporary positive and alcohol will change the test. Jaundice is at present a disputed case, but it may give a false positive test. If a weakly positive test is returned, it should be ruled out and the procedure repeated with precautions.

In the series of 350 cases, 20 were returned with a strong positive Wassermann test. Sixteen cases were undoubtedly syphilitic, as proven by their clinical history. These cases were eighty per cent of the positives. All the other tests were negative. Of the four nonsyphilitic positives, one patient had myeloid leukemia, which gave a strong positive and in a few months returned a negative Wassermann. Another patient was diagnosed as gallbladder disease and operated on. No trouble was found and later the case developed into Hodgkin's disease and the Wassermann varied in being positive and negative. Another patient had advanced pulmonary tuberculosis and, although he had a positive Wassermann test, there were no earmarks of syphilis. Occasionally tuberculosis does give this result to the Wassermann test. The last case with a strongly positive Wassermann was one of cardiorenal disease which at autopsy showed no syphilitic changes.

Of the sixteen people who were undoubtedly syphilitic, only four knew that they had had it, and eight were certain that they had never had the disease. The remaining four cases were uncertain.

Syphilis in the early stages often passes unrecognized and, therefore, untreated. A physician should always suspect syphilis and can pick eighty per cent of the cases by Wassermann. The disease has so many manifestations that it is frequently incorrectly diagnosed. A patient with syphilis had typical duodenal ulcer symptoms and was treated accordingly. Another with a history of typical gallbladder symptoms but without jaundice was syphilitic. Many patients are diagnosed as chronic indigestion sufferers who are really syphilitic. These errors would not be made if the routine Wassermann test was employed.

The vast majority of patients will be treated by the family doctor and he must recognize the disease, in order that he may treat it efficiently. A simple and good means of diagnosis is at hand in the routine use of the Wassermann test.

#### PHYSIOLOGY OF THE THYROID GLAND

Dr. George N. Stewart delivered an address on this subject.

The thyroid gland lies superficially and is easily removed. However, the parathyroids also lie in the same region and were not known to exist until fairly recently. They were, therefore, frequently removed with the thyroid and, as the function of the two glands is extremely different, the symptoms produced, when the supposed thyroid gland was removed, varied accordingly with the amount of the parathyroid tissue which was also removed. This obscured the true thyroid function and now, due to greater knowledge, it is possible to study thyroid insufficiency by sparing the parathyroid glands, and removing the thyroid.

Surgeons noted that, when the whole thyroid gland was removed, cachexia strumipriva resulted. In England, a rare disease was discovered which resembled the cachexia and is called myxedema. When thyroid in any form was fed a cure was affected, the treatment by substitution therapy.

There are a few facts in connection with the thyroid. When a large part of the gland is removed, the remainder hypertrophies. One-tenth of one per cent or one to one thousand parts of the solids of the gland must be present to prevent hyperplasia. Iodine used as an antiseptic, or blowing about the surgery during the operation for removal, will prevent the hyperplasia. In hyperplastic goiter there is very little iodine. If the drug is given over a long period of time, the gland will return to a normal thyroid. To the expert there will be certain changes which show that the gland was hyperplastic, but it is again a good gland.

The product of the thyroid gland is always made from iodine, generally from inorganic iodine, but it is not essential for the substance to be in this form. How long it takes the gland to produce the product of its activity after iodine is in circulation was found by experiments on dogs, which showed that from two to five minutes after the iodine was circulating in the blood, the gland was as enriched as it was going to get. Other experiments proved that it took a period of eight hours before the drug was changed into the active substance, thyroxin, and in thirty hours there was considerably more present than at eight. From this it appears that the thyroid takes all the iodine at once and then at leisure elaborates the drug into a complicated chemical body.

When this substance leaves the gland is not known, but it does exert a definite action on metabolism. Thyroxin can not be detected in the blood in vessels of the gland and it can not be detected in blood collected from the thyroid gland of exophthalmic goiter cases, as was attempted at the Crile Clinic. There is no basis for the term "hyper-

thyroidism." The condition is not proven to be due to thyroid secretion or not. Some of the symptoms are like those of too much thyroxin. However, the thyroid gland is not the real seat of the trouble; it is involved only in this disease. There is no proof that this gland has secretory fibers. One investigator believed he had shown their presence, but no one has ever been able to repeat his results.

The critical ages for the development of goiter in women is during puberty and pregnancy. In Akron, Ohio, prophylaxis was tried on girls in certain grades of the public schools. Each one received a small amount of iodine for ten days twice a year, over a period of years. The results showed that no goiter developed in the girls who took the treatment, but in the cases who did not take the prophylaxis, there was a fifty per cent development of the disease. Prophylaxis was practically perfect.

#### SOME NEWER VIEWPOINTS CONCERNING THE NATURE AND TREATMENT OF NEPHRITIS

This paper was read by Dr. W. McKim Marriott, Professor of Pediatrics and Dean of Washington University School of Medicine, St. Louis.

Nephritis is a general disease which produces changes throughout the body, causing injury which is more marked in the kidneys because these are the paths of excretion of the injurious substances. There are many varieties of nephritis and there may be a gradual transition from one kind to another. Children are good material on which to study the disease and they are subjected to two varieties; parenchymatous or tubular nephritis or nephrosis, and hemorrhagic or glomerular nephritis. These are usually due to infections which are of a specific nature and result in a general damage in the body or to wide-spread capillary changes.

**Parenchymatous or tubular nephritis:** The onset is insidious. There is an oliguria, much albumin and many casts. The chlorides of the urine are diminished or absent and the phenolsulphonephthalein test is normal. The blood pressure is unchanged and there is no acidosis. The eye grounds are normal in appearance and there are no capillary changes. The patient is pale and the blood picture resembles that of secondary anemia. There may be a lipemia. There is no retention of nonprotein nitrogen in the blood and the chlorides of this fluid remain normal. Uremia is absent, but the nutrition of the patient suffers. The child has little resistance and death is generally due to an intercurrent infection. The majority of cases recover without permanent damage to the kidney. At necropsy the kidney appears large and white without normal markings. No bacteria are found in the kidneys.

**Parenchymatous nephritis** occurs in toxemias due to many causes. In childhood it is many times due to toxemias of staphylococcus. It has been found that in all cases of severe parenchymatous nephritis, there was a staphylococcus infection of the nasal maxillary sinus. An increased activity of the infection accompanies the nephritis and treatment of the

sinus resulted in clearing up of the nephritis. Treatment other than to this focus of infection produced only temporary relief.

The manner in which this organism brings about the body changes is a question. There is no evidence of septicemia. Blood cultures are negative. Some toxic substance is formed at the focus which acts not only in situ but on the body cells in general. The edema is not due to lack of renal sufficiency. Generally the body tissues act normally. However, sodium chloride is taken up by the tissues so that the blood level is changed. The blood protein is low and the edema is more marked, as the osmotic pressure of the blood is low and the tissues retain the NaCl and water. In normal individuals the surface tension of the blood serum is low and constant, but in all cases of parenchymatous nephritis this is much lower. It has been found that there is a substance present which is responsible for this change. It is excreted in large amounts in the urine and is not present in edema from other causes. This surface active substance clears up with the infection and is definitely associated with it and especially with edema. It is not a usual protein but a derivative. This substance increases the permeability of a membrane, even colloidal membranes. It appears that the permeability of the kidney to the blood substances is due to this substance. This change in permeability leads to a redistribution of salts in the body and causes edema.

In treating parenchymatous or tubular nephritis, the first thing is to locate and treat the focus of infection. In a child examine the nose, throat and sinuses carefully, and treat according to the findings. Regulate the diet, giving large amounts of protein, as the poor nutrition of the patient is due to the large amounts of protein which are lost through the urine and high protein feeding does not aggravate the symptoms. Two to four grams per kilo of body weight per day of such protein as eggs, milk and meat is good. Green vegetables for the anemia and cod liver oil are beneficial. Diuretics of the purin derivatives have markedly beneficial results. They increase the surface tension of the blood and are, therefore, against the injurious substance. The effects of the drugs are transitory, however. After clearing up the focus, build up the patient by careful living.

**Hemorrhagic or glomerular nephritis:** The onset is abrupt. The patient is acutely ill, listless, febrile, with an acute sore throat and definite uremic symptoms. At first there may be an oliguria or occasionally diuresis. In a few days the urine is normal. The diagnostic feature of the urine is its smoky appearance, hematuria. Later this apparently clears up but the blood is still present. Albumin in traces and casts are few. There is a secondary anemia. Nonprotein nitrogen is increased, the chlorides only moderately, and the surface tension is normal. There is a diminished excretion of phenolsulphonephthalein. The blood pressure is increased sometime during the course of the disease. Edema is rarely marked. The symptoms subside in a short time in the majority of

cases but some die. At necropsy the kidney in early stages of the disease is large and red, and later is large and white with petechial hemorrhages.

The etiologic agent is the hemolytic streptococcus. The focus of infection is the tonsil, mastoid, middle ear, rarely the nasal sinus. Apparently the damage is not the result of septicemia. The change in the glomeruli appears to be the result of the streptococcus toxin. All the capillaries of the body are affected. This can be seen early in the attack in the capillaries at the base of the finger nails. There is an increased tortuosity and spasticity of the artery and a dilatation of the vein. In prolonged cases the damage is permanent. The capillaries of the gastrointestinal tract are liable to be affected before those of the kidney. The damage to the glomeruli is more permanent than in parenchymatous nephritis. The symptoms are due to the general capillary damage as well as to renal insufficiency. Hypertension is due to general capillary constriction. The edema is due to the accumulation of water in the intercellular spaces, not to the swelling of colloids. Uremia is not explained by renal insufficiency. The high blood pressure may be a factor in producing this state. A base is extracted from the blood of such cases which is responsible for the symptoms and also causes the capillary changes.

In treating glomerular nephritis locate and treat the focus of infection. General care without undue strain on the kidney is important. The patient should be kept in bed. A low protein diet is essential. Only enough should be given to cover the minimum needs of the body. Milk is the best food to give because it is a complete protein and has the least waste. It is bad to restrict the water intake; the more taken the greater the excretion. Diuretics are contraindicated. Alkalis have been advised but may lead to alkalosis and there is no evidence that alkali benefits the kidney. Calcium lactate by mouth in large amounts is good. Fifteen grains every three or four hours can be given. Sweating is bad. Intravenous dextrose has a protein-sparing action and is beneficial. Bleeding and transfusion are good.

In all cases of glomerular nephritis there is some tubular involvement, but the kidney changes are not the differentiating factors. Both conditions are general diseases with most marked changes in the kidneys and there may be a transition from one type to the other.

#### SOME OBSERVATIONS ON ARTERIOVENOUS ANEURISM, PART I

This address was delivered by Dr. Alan N. Drury.

The signs found when there is a leak between an artery and a vein are similar to those which occur in an incompetent aortic valve. In civil practice, arteriovenous aneurism is rather rare, but many were seen in the armies. Human subjects were paralleled with those results found in experimental work, and in this way got direct information to support the information found clinically.

One striking thing is seen in a case where there is

a fistula in peripheral vessels, as the femorals. When this is cut out there are certain striking signs. The heart rate at rest is about normal, but, as soon as compression to the aneurism is applied, the heart rate drops thirty to forty beats per minute. This slowing of the pulse rate is an absolute sign in the differential diagnosis between other forms of aneurism. Slowing is also produced by the vagus being stimulated. When the aneurism to the fistula is compressed, the blood pressure rises. If the vagus nerve is stimulated, heart rate is slowed. After the administration of atropine to laboratory animals, this slowing is absent.

The systolic pressure in the arm is about normal and the diastolic pressure is quite low in cases with arteriovenous aneurism in circulation. When this is out of circulation, the blood pressure goes to about normal. In aortic regurgitation, there is a similar blood pressure. Systolic pressure is normal and diastolic is low, produced by a leak, some say into the ventricle, others say into the peripheral side. One sign does not change when the aneurism is cut out. In the femoral vessels there is a higher pressure than in the brachial and, when the aneurism is closed, there is still the differential pressure.

The form of the pulse has been found to be little altered. In both arteriovenous aneurism and aortic regurgitation there is a water hammer pulse. This character is associated with quickness of the upstroke of the pulse. When the arm is raised horizontally, there is a thrill at the height of the pulse. When the aneurism is put out of circulation, there is a remarkable change and the pulse rises slower and more sustained. The pulse was recorded when the patient was under atropine, so that the same rate of the heart was maintained and found that there was practically a normal pulse with the exception that the pulse rises slightly quicker. Therefore, the water hammer pulse must be due to a low diastolic pressure, present just before systole of the heart, and must be associated with abnormal swing of the walls of the aorta and not due to changes in the arteries themselves, as the pulse comes so quickly to the muscles after cutting out the arteriovenous aneurism.

Capillary pulsation is seen in normal individuals under certain circumstances. It has always been suggested that capillary pulsation is due to the difference between systolic and diastolic pressure. In aortic regurgitation there is such a difference. If this is true, then in arteriovenous aneurism this capillary pulsation would be normal. When the aneurism is closed, it was found that there was no change in the capillary pulsation, but it was just visible. Therefore, we have a sign that it is not abolished. It has been shown by recent work to be due to a condition of the small vessels in the skin and not to a difference in systolic and diastolic pressure.

Recent work on the velocity of the pulse wave shows that the pulse velocity is increased, if the blood pressure is raised. The mean arterial pressure is raised in the human when the aneurism is

cut out. When it is in circulation, the pulse travels slower than when the blood pressure is raised. The things which have been observed in the experiments have been the abnormal pressure, the abnormal pulse and capillary pulsation.

#### THE SYNDROME OF COMPRESSION OF THE SPINAL CORD

This paper was read by Dr. Henry Woltman,  
Associate Neurologist, Mayo Clinic

The fibers that go up the posterior commissural tract are discriminating fibers. This is not possible with the fibers that go up the ventral spinothalamic tract. We know how many times we have been touched but do not know the shape of the figure which may be drawn on the skin. A lesion of the pyramidal tract gives a form of paralysis known as hemiplegia. The muscles are rigid, no atrophy takes place and there is a positive Babinski reflex. If there is a lesion of the anterior horn cells with a lower motor neurone lesion, there is a type of paralysis seen in anterior poliomyelitis. There is paralysis with muscular atrophy.

The Brown-Sequard syndrome has three primary features. One is the spastic paralysis on the same side as the lesion. Another feature is the absence of pain and temperature on the opposite side below the lesion. The third feature is the preservation of tactile sensation on both sides. Inspection is a very important point in all cases. To determine the level of the lesion, examine the motility, the sensation and the reflexes. The nerve supply to the skin is a very definite one. If the loss of sensation is below the umbilicus, the lesion must be in the tenth dorsal segment. The shortening of the spinal cord takes place during intrauterine life, and this must be taken into account, to tell at what level the lesion occurs. A simple rule is Cooper's rule. Divide the back into three equal parts. If the lesion is in the upper one-third, count up three vertebrae from the lesion; if in the middle one-third, count up five vertebrae, and if in the lower one-third, count up seven. The reflexes help to determine the level and the part of the cord involved.

The simplest tendon reflex will be abolished, if there is at any place an injury to the reflex arc. The abdominal reflexes are more complicated, so that in hemiplegia the tendon reflexes are increased and the abnormal ones decreased. The plantar reflex is one of the most important signs. In some disease, as myxedema, the character of the reflexes change.

Root pain is usually continuous or recurrent and spreads gradually. In sciatica the first attack is usually the worst and there is a tenderness over the nerve which is not found in root pains. Changes in weather affect sciatic but there is no increase in the pain from the root.

Tumors within the pelvis give similar cutaneous sensations as spinal cord tumors of the cauda. In all such cases a rectal examination should be made. It is sometimes difficult to tell whether the tumor is outside or inside the dura or inside the cord itself.

One of the best signs, when the growth is outside the spinal cord, is that often an area of intact sensation and relatively good sensation is found around the anus. X-ray is a great help in telling whether you are dealing with metastases.

In spina bifida the symptoms usually appear at fifteen to twenty years. Finding spindly legs, foot deformities, tuft of hair over the sacrum and a sacral dimple help in the diagnosis. In inflammation of the cord the patient may get root pains and all the signs of spinal cord tumor. In subacute cases the combined degeneration of the cord is painless and has a distinct level. Degeneration in plegia is a patchy degeneration of the cord and brain, usually lying about the blood vessels. Absent knee jerk is sometimes found in cord tumors. This may be diagnostic of lues but with this condition there are other symptoms to collaborate the diagnosis. Parasyringomyelia is a chronic affair and lasts many years. There may be a superimposed tumor that makes the symptoms very confusing. Multiple sclerosis may be difficult to diagnose but there are other characteristic symptoms to aid.

#### CARCINOMA MAMMAE

This address was delivered by Sir Henry M. W. Gray

Several quotations were given from Dr. Janet Lane Claypon's interesting and valuable report on "Cancer of the Breast," published last year by the British Ministry of Health. Her report is compiled from a study of 25,410 published cases, deals with the disease from numerous and varied points of view. The average length of life with carcinoma mammae with no operation is thirty-seven months after the reported onset. This must be only approximate. The difference between young and old patients makes the difference. A young woman notices any abnormality of the breast earlier than an old woman. Carcinoma is essentially a disease of mature age, and grows more slowly in the mature woman.

A proper early operation seems to cure most cases. Later the incurable cases must be operated on for temporary relief. It is not possible to say that early carcinoma has not metastasized beyond the local field. Permeation occurs in the region of the primary growth also, in the site of the secondary organic growths. Blocking of the lymph stream by the neoplasm causes the lymph to carry some cells in its course, so we find metastases in all directions around the breast. Ordinarily the route is the axilla, to the supraclavicular glands, and the lower quadrant to the intrathoracic region.

The duration of life after operation depends upon the stage of the disease and the method of the surgeon. Under modern methods twelve to fifteen per cent are alive at the end of five years after a complete operation, in cases in which the tumor is small and the skin is not adherent and only one or two axillary glands are affected. The expectation of life in a woman over fifty years of age is three years in an incomplete operation and in complete operation six years, eight months.

A growth the size of an acorn is fairly easily recognized. A carcinoma of this size is usually irregular, fixed at one or more points and cannot be moved about as an adenoma. All the changes are due to the extension of the cells within the lymphatics, and after permeation of the vessels takes place, emboli occur.

The symptoms are a lump in the breast. Later there is pain, but this usually is not the earliest complaint. In any tumor of the breast, operate if in doubt, because 75 per cent are malignant, and many of the benign growths will become malignant. Many men consider there is great risk in manipulating the gland. Many do a radical operation rather than make a frozen section to verify the diagnosis. The safest way is the complete operation. The two-stage operation according to many is worthless. The best method is to have a frozen section made, and also do a radical operation at the same time. Often a positive slide is obtained by more extensive sectioning of the tissues.

In the skin the lymph spaces are wide and there is an easy method of spread. One must cut an inch and a half or two inches from the nearest infiltrated part. The carcinoma cells in the mammary tissue follow the lymph vessels that lie parallel to the mammary fibers. Therefore, one must excise the mammary tissue as completely as possible. The clavicular portion of the pectoralis major is less often affected than the sternal part. It is important to remove both the pectoralis minor and major. If is best never to take chances. However, with a small growth it never seems to be doing justice to the patient without a complete operation, as this does not in any way limit the movements of the arm. There is no benefit in removing any part of the clavicle. If this bone is divided, the severity of the operation is increased. Remove portions of the ribs only when the growth is adherent only to a small area. When the growth occupies the lower quadrant, always remove the sheath of the rectus abdominis muscle.

For the operation a local anesthetic, 0.5 per cent novocaine, is injected all around the tumor, under the clavicle, along the sternum, in the axilla and under the breast. The incision begins on the arm, runs down along axillary fold, keeping one and a half to two inches away from any part of the tumor. The brachial vein should be preserved to take care of possible collateral circulation. The posterior flap is first exposed, then the anterior. Next the pectoralis major is divided, first the clavicular portion, then the sternal part. Then the axilla is cleared. The axillary vessels are dealt with as they appear. Use fine silk or linen in ligating these veins, as catgut is apt to slip. The vessels are striped of fat. The clearing of the posterior vessels is one of the most difficult of operations. Fortunately these are not usually involved until late and the prognosis is bad if large glands are there. All the area, except where working, is covered with gauze to prevent chilling and shock. Careful hemostasis also prevents shock. Plain catgut is used for the skin. Tube

drains are placed through a stab wound through the posterior fold. The dressings should be of equal thickness all over the breast. The arm is held at right angles to the chest with a pillow under the arm, and use spiral bandage for axillary dressing. The tube drain is usually removed in twenty-four hours. The patient is encouraged to move the arm the next day, and should not be content until she can move the hand across the chest. The patient can get up in three days and goes home in ten.

Edema of the arm is the result of the spread of the disease or due to poor operation. In both cases it is due to a venous and lymphatic stasis. It is very distressing and causes much pain which may be lacerating in character. Postoperative edema is usually preventable. It is generally found two days after operation and is frequently due to pressure from bandages. It affects the lower and posterior part of the forearm just above the elbow. The treatment is to remove the pressure. Thrombosis may produce postoperative edema. It appears late and is more persistent than edema from pressure. In these cases avoid movement or massage for ten days. The scar in the axilla may contract. This squeezes the veins. Treat this by properly incising the scar, rebuilding the axillary pocket or proper drainage.

#### RENAL TUBERCULOSIS

Dr. Hugh Cabot delivered this address

Renal tuberculosis is an exceedingly common condition and one frequently seen. It is generally agreed that the infection is blood borne, always from some other focus in the body. Often we cannot demonstrate any other focus, which may be in the chest, bronchial glands or in many cases spreads from the mesenteric glands from an old bovine infection. As long as twenty years ago it was thought that tuberculosis of the kidney never healed without complete removal of the same. At the present time there has never been presented to a scientific body a specimen of healed renal tuberculosis lesion. Specimens have been shown with a small cortical scar, but renal tuberculosis is primarily never cortical. It is important that we get the idea that renal tuberculosis will never get well under treatment. Often cases are seen which are reported cures by sanatoriums, that have had bovine tuberculosis bacilli in the urine with blood and pus. These arrested cases have a closure of the ureter, which are very dangerous cases.

The lesion in the medullary part of the organ works down towards the pelvis and ureters. The earliest lesion that is found is a change in the ureter, a stiffening and thickening of the walls, the sort of lesion that will produce stricture of the ureter by contraction.

It is important to get early cases. The urologist finds what he thinks to be an early case but, if the kidney is removed and sent to the pathologist, the report is old tuberculosis of the kidney. Probably he had lesion five or more years; therefore, it is

not wise to talk of early lesions, because the symptoms are not early. The bladder is little susceptible to tubercle bacilli and the only way there is of discovering the condition is by stricture of the ureter with distention of the capsule. Infection of the bladder is apt to be late. There is evidence that renal tuberculosis has been present for 25 to 50 years.

Tuberculosis of the kidney may give pain similar to kidney stone, but rarely are the two conditions found together. Every patient with suspected renal tuberculosis should be subjected to x-ray. The diagnosis of this disease is not easy. Must determine that patient has tuberculosis in the urinary tract. This proves it is a renal infection. Then see that there is one sound kidney, for this organ which is not infected with the tubercle bacilli usually has a cocci or bacilli infection. It is important to distinguish between the two infections, as they closely resemble each other.

Of one hundred patients treated by nephrectomy, one to two per cent die as a result of operation. Eighty-five per cent survive and fifteen to twenty per cent will die in two years of tuberculosis of the the other kidney. The last fifteen per cent are those that we are chiefly concerned with. All of these are believed to have had one sound kidney. Operation for bilateral renal tuberculosis does little good. There is a question whether the methods are too incomplete or whether there was a closed tuberculosis lesion within the organ. The latter is not probable because closed lesions do not remain so for any great length of time. Whatever the cause you will usually find a dilatation of the ureter on the other side.

Some degree of retention is a most important factor in causing inflammation. Each time a ureter is catheterized, we have a potential retention. The single catheterization of a ureter is all important. One time is sufficient. Any instrumentation of a patient with urinary tuberculosis does him harm. However, once is necessary. Diagnosis can be made without any instrumentation, if we find the bacilli, blood and pus in the urine. The other question is, has he a sound kidney on the opposite side?

Catheterize the sound kidney to show its functional capacity and soundness. The phenolphthalein test shows the driving power of that kidney. Let it run ten minutes. Sometimes you will find that the dye at that time is too small in amount. All other findings may be negative. All such cases die ten to fourteen days after the other kidney is removed. Only one lesion is made better with removal of the other kidney, and that is the toxic nephritis of Albarran. All other kidney lesions do not do well. Advice is to let the other man operate in these cases. It is better to suffer with ills they already have and not from the ills that may follow.

All the above facts should be proven at one sitting. As a precaution, inject some of the urine into a guinea pig. In cases that show indications of inflammation and no organisms, in one case may be tuberculosis, in another may be toxic nephritis. In

one the kidney should be taken out, in the other it should not. The pig in such cases is a valuable aid in diagnosis, and will show any lesions inside of four to five weeks. This time interval makes little difference in the prognosis. The tubercle bacillus will not be missed in more than ten to fifteen per cent of cases with modern laboratory methods, but in these there will be the pig to fall back on.

Certain postoperative methods are of value. How soon the patient can return to work depends upon the operative procedures. Oil of sandalwood has been found very valuable in relieving the desire to urinate in renal tuberculosis. It has no power to cure the lesion. Its chief value is postoperative and should be continued for three or four years. As a regular routine use tuberculin. Give very small doses once a week. That produces a very slight reaction. Giving this dose for one year promotes a more or less rapid and smooth healing of the wound. Ultraviolet ray, especially that of the direct sunlight, is of value. This should not be taken through a window glass, as this removes the therapeutic rays. When sunlight is not available, the ultraviolet rays from the quartz lamp are of value. General methods of treating tuberculous lesions should be followed for one year. After that time they feel so well, it is hard to get them to do anything. The above postoperative methods will no doubt decrease the mortality fifteen to twenty per cent that now is a blot on the treatment of renal tuberculosis.

#### THE DIAGNOSIS OF HIP JOINT DISEASE

This paper was read by Dr. Nathaniel Allison

In order to diagnose hip joint disease, certain pathologic conditions should be born in mind. Unfortunately, the findings are of a later period of development. Two conditions are found, a proliferation change in the synovial membrane, and a degeneration of articular cartilage. The two pathologic pictures constitute two groups. In diagnosing, consider which of the above conditions you have present. The proliferation type is usually due to trauma or an infection of coccus origin. The degenerative type is seen in old age, the wear and tear on the joint; in gout, central nervous system disturbances, bone tumors, toxemias, etc. Unfortunately the causative factor is not known in the great majority of joint changes.

Whatever the cause, after the condition is started, we have a vicious cycle that increases with time. The proliferating tissue destroys the joint cartilage. In some instances this is not injured, but generally the cartilage disappears in time, resulting in a fibrous or bony ankylosis. There may be here and there islands of cartilage. Also there are changes in the cancellous marrow, that proliferates and lifts the cartilage off the joint. Thus we see there is a proliferation from above and below the cartilage, resulting in distention and ankylosis. The two layers of granulations, from the synovial membrane and the bone marrow, destroy the articulation and new formed fibrous and bony structure results in ankylosis. The change which takes place in the bone

is atrophy of nonuse. The cortex of bone is thickened. This proceeds very rapidly.

Degenerative joint disease is a slow, progressive deterioration of joint tissues seen in old people who have done heavy work. The primary change is in the hyaline cartilage. This type does not lead to ankylosis but the bone becomes dense, and we have a certain amount of deformity in the joint, due to a marginal overgrowth. Sometimes this type becomes the proliferating one, when small masses break off and float around in the joint.

Tuberculosis and syphilis have types of their own and are readily recognized. The pyogenic organisms produce destruction of the joint. These later produce an exudate which rapidly dissolves the cartilage. The tuberculous exudate is made up of leucocytes and the cartilage is not readily dissolved by it. The above explains the changes seen when a joint in either tuberculosis or pyogenic infection is opened.

In the cases of known cause there has been a therapy with fairly satisfactory results. The greatest trouble lies in the fact that joint disease is seen well established and at that time diagnosis is easy, but early diagnosis is necessary. The great class of unknown causative factors are the ones, in which treatment has not been satisfactory.

Diagnosis is very important, especially in children. All cases are not tuberculous. If the wrong diagnosis is made, we may treat for tuberculosis and after several months of nonuse get a certain amount of atrophy which may give trouble later. Therefore, every means at our disposal should be used to make a correct one, as x-ray, physical findings, laboratory and clinical tests, as tuberculin test and pyogenic inoculations. Diagnosis in cases for which the cause is not known is only guess work. The thing that is necessary is a more careful and more painstaking method of diagnosis, especially in conditions of the hip and knee.

#### NEWER PHYSIOLOGY AND PHYSIOLOGIC RESEARCH IN HEART DISORDERS

This address was delivered by Dr. Alan N. Drury

Some of the recent work on the heart has been done with the conduction defects. The attempt was made to discover how a conduction wave died out when it passed into damaged heart muscle. There are three types of damage that can be done to a heart muscle experimentally. By compressing the muscle, by cooling the muscle, and in situ by perfusing with a solution just on the acid side of normal.

The auricle when stretched out has a long appendix which can be compressed. A galvanometer is attached to the undamaged part and one to the damaged side. An electrical record of the contraction process is made. The contraction takes longer and longer to pass as the damage remains and finally there is a two to one beat and then a complete block. Cold gives the same results as compression. The influence of the vagus, providing the auricle ring is constant, causes a profound heart block. While there is a complete heart block between the auricle and ventricle, this block is lifted

between the damaged and undamaged tissue. After the vagus stimulation is removed, the original block returns. This is true of cold or pressure but cannot be shown as well with the acid perfuse due to the spread of the impulse. This effect cannot be obtained with a subminimal stimulation of the vagus.

In these experiments the auricle is kept rhythmic. There is a wave of contraction through the electrodes that lie in all sorts of tissue. It was found that it takes longer for the contraction to get through the damaged part, the wave passing progressively slower as it reaches the distal contact. As the record writes more slowly, the height of the contraction wave is decreased. When dealing with normal electrical conduction and it passes into degraded types, there is a foul in conduction.

If the impulse is sent in the opposite direction, starting in the damaged tissue and passing to the undamaged, which is done by decreasing the distance from the point of impulse nine-twelfths of its way, the result is a response at the tip of the appendix. Thus the impulse dies out because it can only pass through a certain distance of damaged muscle, not because it has reached muscle which cannot contract. The conduction disturbance is similar to nervous conduction, when the nerve is subjected to cold or narcosis. There is some evidence that the wave carries exceedingly slowly in late stages. Heart block has been looked upon as a refractory period of the heart but the new work rather points to the slowing upon the conduction wave.

Digitalis, strophanthin and quinidin with a high degree of poison, increase markedly this slowing of the conduction. This brings in the use of this conception. It brings in an extra systole, produced by previous beats which have been traveling very slowly through the heart muscle and have just produced their effect. It travels and keeps alive at a very slow rate, and finally shows up as an extra systole.

#### DISEASES OF THE CORONARY ARTERY

This paper was read by Dr. James B. Herrick.

Acute obstruction of the coronary artery is not uncommon and is a clinical entity. For a long time it was considered to be of interest only to pathologists, the belief being that obstruction of this artery caused sudden death, and a few years ago coronary obstruction as a diagnosis was said to be impossible. Cases which recovered were thought to be angina pectoris. Also the coronary artery was considered a terminal vessel without anastomosis. Today it is known that there is an anastomosis in the endocardial tissue which is not functional unless needed. Animals have survived months and years after experimental occlusion of a coronary artery and pathologists have reported human cases of obstruction. From these facts it is definitely concluded that coronary obstruction can occur, and if the ventricle is not thrown into fibrillation at once or the weakened wall does not rupture, recovery is possible.

Clinically the cases divide themselves into three

groups. Those cases in which obstruction causes sudden death, either instantaneous and painless, without a spasm, or there is a profound shock with death in a few hours. Another group of cases are those in which there are mild symptoms, as stitch-like pains due to obstruction of small twigs of the artery. These cases are nonfatal and leave a patchy fibrosis of the myocardium. The third group are those cases in which the symptoms are severe and the case is recognized as cardiac and death is usual but not necessary.

The symptoms for this third group vary with the suddenness of the occlusion, the size of the artery occluded and the place in the heart muscle; also with the extent of the injury and the amount of function lost and the compensation which occurs. When a vessel is becoming narrowed, other vessels enlarge and the heart is prepared, so the insult is not as overwhelming as when no previous compensation has taken place. This condition is met with in people of an age for vascular changes, the same type which is subject to angina pectoris.

The outstanding feature of obstruction is pain; it lasts and does not pass off. There is no provocative cause, which is a distinguishing feature from angina; it is severe and prolonged and lies in the lower midsternal region. In general, there is a sudden drop in blood pressure. This is significant and there may be daily variations. The heart tones may be indistinct and extra systoles are common. At times there is an auricular fibrillation or a tachycardia of ventricular origin. Heart block has been known. Shock is common; the patient is pale and weak, with a small pulse and some do not rally, the ventricle suddenly going into fibrillation. In other cases, there is a pseudo-recovery. The pain stops and the patient feels strong. Respiration is free or slightly dyspneic, with rales and later Cheyne-Stokes breathing and congestion of the lungs, etc. If the area of infarction reaches the epicardium, there is a small rupture with a deposit of fibrinous exudate which gives rise to a friction rub.

Fever may be slight or absent but sometimes there is a high fever. This is a toxic fever, due to the heart muscle destruction. It is part of a necrotic fever. The polymorphonuclears are often increased. These features are important when present, as angina pectoris is always fever-free. The patient's mind is free from anxiety in many cases, but some are not so, probably due to complications.

The fate of the patient after coronary accident is not always the same. Some are in a status anginosus and die suddenly after weeks of intense suffering. Other patients have a dilatation of the heart with typical symptoms. Death is the rule but there may be a relative recovery, which may occur after weeks of rest, digitalis and care. There may be a recurrence in new vessels or a repetition in the same artery. The electrocardiograph may help in the recognition of early cases. Many have seen later

changes in the late stages, but how constant and how to look upon these findings is questionable.

Emphasis on the symptoms of lower midsternal pain and collapse may make the physician think of certain gastrointestinal disturbances and thus diagnose the case. The history should eliminate tabes dorsalis, pneumonia, gallbladder trouble, etc.

In treating such cases rest in bed should be strictly enforced. The diet must be light and gas-forming foods should be avoided. Morphia can be given for the pain and enemata are preferred to cathartics. The patient should be kept warm. If the heart is feeble and irregular, digitalis can be given. There have been no accidents from the administration of this drug. Stimulants, of course, are given to a failing heart.

The chief disease from which obstruction of the coronary must be distinguished is angina pectoris. The diagnosis is generally difficult. The main features of differentiation are that in obstruction there is a lack of provocative cause for the attack, the type of the severe pain and the fact that it is prolonged. This pain is referred to the lower midsternal line. The heart tones are weak. There is a profound shock and fever with leucocytosis may be present.

#### THE PATHOLOGY OF CORONARY ARTERY SCLEROSIS, ANATOMY AND HISTOLOGY

This paper was read by Dr. R. L. Benson, Professor of Pathology, University of Oregon Medical School, Portland.

Up to five years ago coronary thrombosis was never given as the cause of death. Now with many physicians this is given as the clinical diagnosis. From this it is concluded that the disease is not new but the recognition of the condition is. In a series of two hundred cases of this disease, it was found that the majority had had anginal pains; some had an abdominal type of pain which was usually confused with other conditions, generally those of gastrointestinal origin. There was not much difference between the syphilitic cases and the non-syphilitic, the age incidence being about the same for both types. Sex was unimportant, as was occupation and the ages varied from 27 to 87 years. Anomalies in the vascular supply to the heart were important. Many cases had multiple coronary orifices, many congenital and some acquired. All cases, where the occlusion occurred at the coronary orifice, were syphilitic.

Anastomoses of the coronary arteries have been known for a long time. The most important ones are on the base of the heart; there are others at the apex. It has been proven experimentally that occlusion of a main coronary artery does not result in death, but it generally does. It causes a decrease of diastolic pressure. General arteriosclerosis may raise the blood pressure but coronary arteriosclerosis always lowers it.

The cause of coronary obstruction may be thrombosis, embolism, arteriosclerotic closure, obliterative endarteritis, dislodgment of an arteriosclerotic plaque, syphilitic endarteritis or closure of the coronary artery orifice. The effects may be immediate stoppage of the heart, infarction causing early death, late death or healing, and rupture. Thrombosis of the left ventricle is a frequent finding, pieces of which have produced brain emboli. Death may occur from late effects of thrombosis or there may be a slight pain and symptoms. This last may be best explained by a slow closure of the vessels with compensatory dilatation.

The causes of thrombosis are arteriosclerosis, obliterative endarteritis, thrombi of infective origin, syphilis, pneumonia, due to the large number of leucocytes liberated and some of the arteries show inflammatory changes. There are many variations of the effects of thrombosis. Where the anastomosis is poor, immediate death results. If an infarction is produced, myofibrosis occurs. Sometimes the symptoms are mild, due to a gradual narrowing of the artery by arteriosclerosis. Thus it seems that arteriosclerosis is both a cause and protection against thrombosis. While syphilis is not one of the most common causes of coronary thrombosis, it is one cause and is very important. The cause of myofibrosis is variable and is in no sense diagnostic of syphilis but syphilis may produce it or it may have been due to any form of heart injury. The microscope is the criterion of diagnosis in such cases.

Ten hearts from this series had septic infarcts which grew on culturing. In every case the organism found was streptococcus nonhemolyticus. This organism when injected into rabbits failed to produce a septicemia. Many of the cases are cases of angina pectoris but not a single case of serious obstructive disorders of the aorta could be found.

#### MEDICAL ASPECTS OF GASTRIC ULCER

This address was delivered by Dr. Lewellys F. Barker

In regard to the incidence of peptic ulcer in general, it was the old idea that chronic gastric ulcer is commoner than the chronic duodenal ulcer. This was due to the fault of the pathologist in not finding the lower ulcer as frequently as that in the stomach. The view that gastric ulcer was more common in women than in men is wrong.

Much is obscure concerning the etiologic factor in this condition. In how far constitutions and environment are affective is questionable. But family inheritance, capillarity and endocrine disturbances do play a role. A primary mucous erosion forms an acute ulcer. A more chronic funnel-shaped erosion is an indurated ulcer. If nutritive disturbances give rise to ulcer, why does it heal? Attention is focused on spasm of the smooth muscle of the intestinal tract, local inflammation of the mucosa, bacteria, reflex secretion of hydrochloric acid, absence of antiferments, spasms of the endocrine glands,

thermal causes, violent food particles and clamps used in gastroenterotomy, as causes of ulcer formation.

There is generally a long history of digestive disturbances, with gas, flatulence and a heavy feeling in the lower, left epigastrium. Many patients treat for dyspepsia, constipation, etc., until a severer pain calls in the real knowledge. Sometimes, however, there is a hemorrhage which comes like a bolt, with no history. The majority do have epigastric pain which is characteristic and suspicious of ulcer, when in that particular site. With gastric ulcer there is pain with food, subsiding gradually but returning when more food is taken. The lateness in appearance of the pain tells its location. With duodenal ulcer the pain appears two to four hours after eating or in the night and is called the "hunger or nocturnal pain." Food relieves this feeling. Such patients have no dread of eating, have a good appetite and are robust. Nausea is more characteristic of gastric ulcer but is not pathognomonic. Pains are not absolutely typical; there may be all types of pain and that of gastric and duodenal ulcer may be located at the same point. The pain of duodenal ulcer is more commonly periodic, but this may occur in the other type also. Therefore it is necessary to be cautious and every patient should be thoroughly studied.

Tenderness and the state of the general nutrition may give some idea of the patient's condition but are unreliable signs. The stomach contents and the stool should be examined. One-fifth of all duodenal ulcers show a hypersecretion. Two-thirds of gastric ulcers show it. A hypersecretion, with pyloric spasm and a long emptying time for the stomach, gives the pyloric syndrome. That is, these symptoms are most characteristic of ulcers near the pylorus and the passing of a tube in such cases is dangerous. Most patients show occult blood in the stool. Outspoken vomiting of blood is suggestive of ulcer. But this is given in other cases, as appendicitis, cholecystitis, etc. X-ray is important in confirmation and extending the diagnosis. By the gentle manipulation of a barium meal in a fluoroscopic examination will frequently reveal a dent that has previously been obscure. With the duodenal ulcer there may be a hypermotility.

The general practitioner sees the cases of peptic ulcer earlier than the surgeon. There are two classes of cases, those which need conservative treatment and those which require surgical procedure. Surgical intervention, most internists agree, should be resorted to in case of threatened perforation, or in cases when life is threatened. Also this method is advisable when the nutritive state of the patient is bad. It is considered best, in the not too severe cases, to try the conservative treatment before resorting to surgery. This treatment is mainly protective, not only to the ulcer but to the organism as a whole, the regime being rest and diet. The dietary consists of food which is mechanically non-irritating. It must not increase the hydrochloric acid of the stomach or produce a hypersecretion,

and the food must be small in amount but varied, and there must be sufficient calories in it to take care of the general nutrition.

Rigid schemes for treatment are poor. The diet should be individualized and should contain the adequate requirements. Hypersecretion can be lessened by small meals every hour. Mild cases do not require a long complete rest in bed. It is the tendency now to change to an ambulatory regime earlier than previously. Abolition of the acute symptoms can be easily accomplished but healing is a long process.

Alkalis, if used freely and continuously, may lead to poison. The drugs which can be given are hyoscyamine and papaverine in small doses. The giving of intravenous injections of foreign protein needs more work before it can be accepted as routine treatment.

After the relief of symptoms and normal nutrition has returned, the patient should be kept on a more or less restricted diet and a restful type of life. The question of keeping a patient on a protective regime permanently is good, even in those cases in which surgery has been used, for this procedure will make the results more satisfactory where, without following this plan, the gastroenterostomy is generally unsatisfactory.

#### THE DISEASES OF THE ENDOMETRIUM

This paper was presented by Dr. R. W. TeLinde,  
Instructor in Gynecology, Johns Hopkins  
Medical School.

The endometrium is composed of three layers, the compactum, the spongiosum and the basalis. The two upper layers undergo constant change under the influence of the corpus luteum. The basalis does not change. During the interval stage of the menstrual cycle, the endometrium has wide, so-called corkscrew glands. Premenstrual stage has quite noticeable change. The corpus luteum is maturing and hypertrophy of the lining of the uterus takes place. When the corpus luteum has reached maturity, menstruation begins and retrogression commences. The epithelium becomes flatter and the glands wider, a secretion appears and this stage is known as the secreting stage. The cells of the endometrium in true pregnancy are true decidua cells, otherwise the stroma is similar to the premenstrual stage. One day before menstruation there is a marked infiltration of round cells and polymorphonuclears. This infiltration continues during part of menstruation and takes place, although there is no evidence of inflammation. The first day of the hemorrhage there is a slight loss of tissue, not gross but merely a few cells cast off. The blood vessels open directly upon the surface and many of the nuclei of the cells undergo degeneration. On the second day more tissue is cast off and by this time most of the active layers have been cast off. The basalis does not undergo change. On the third day all that is left of the endometrium is the nonfunctioning basalis and there is now evidence of regeneration. On the

fourth day there is almost complete regeneration. On the sixth day mitotic figures are found in the cells of the stroma.

In chronic endometritis there is a marked infiltration of polys, round cells and plasma cells. The endometrium is normally a lymphoid organ and endometritis is often diagnosed because of the presence of cells which are normal constituents of endometrium just before bleeding begins. Plasma cells are not normal and indicate inflammation in all cases and are seen associated with tuberculosis, carcinoma and retained products of conception. Tuberculosis of the endometrium is not a common finding. Menstruation goes on normally in almost all cases.

Hyperplasia of the endometrium means a definite clinical and pathologic entity. May occur any time during the menstrual life of a woman and is most common between thirty and thirty-five. Menorrhagia is the most typical symptom and metrorrhagia is also found and sometimes a constant flow. Bleeding may be extreme and can only be confused with adenocarcinoma.

Adenocarcinoma shows a change in glands, spoken of as the Swiss cheese pattern. Some say these glands are retention affairs, due to the sealing over of the inflamed glands. Others say it is an overgrowth of the basalis layer. However, the picture of the basalis is somewhat similar to that seen in hyperplasia. There are also changes in the stroma.

Mitotic figures are frequently seen in the stroma. The treatment for this condition differs with the age of the patient. If near the menopause, use radium. If it is a young individual, thirteen to twenty years old, there is a fear that radium would cause permanent amenorrhea. If in the late thirty and has children, hysterectomy is sometimes indicated. Small doses of radium have been given to a female of this age, and may check the menses for five or six months, but when they do return, they occur normally. To the young patient, repeated curettage is the rule.

In carcinoma of the endometrium, the diagnosis by means of the curet is very important. This type of carcinoma gives a high percentage of cures. They are usually seen at menopause or after menopause and occasionally in a younger female.

Adenocarcinoma of the endometrium gives a varied picture. Often the only thing which gives a suspicion of carcinoma is the immense amount of glandular tissue present.

Sarcoma of the endometrium is a very rare condition and occurs at both extremities of life.

Chorionic tumors have certain things to remember about them. In these benign and malignant tumors there are the same elements as are present in a normal villus. Even the normal chorionic elements possess eroding power. The chorionic structures are often carried to other structures in normal pregnancies. There are the essential lesions of the hydatiform mole which is a proliferation of trophoblastic tissue. Chorionepithelioma differs from the benign tumors in its invasive power.

From curettement alone it is impossible to make a differential diagnosis from benign and malignant hydatidiform mole. One should curette and watch particularly closely. If bleeding takes place, do a hysterectomy. No doubt this procedure will take out a small percentage of benign tumors but this error is better than the large percentage of malignant ones.

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#### THE SIGNIFICANCE OF PAIN AS A SYMPTOM IN THE DIAGNOSIS OF DISEASES OF THE NERVOUS SYSTEM

This address was delivered by  
Dr. Henry W. Woltman.

No pain is pathognomonic. Any disease may have many types of pain, and it is entirely subjective. The things we find out about pain are its location, duration, frequency, character, intensity, progress and its association with other symptoms.

The commonest site of pain is the head. A headache, often persistent, occurring in the morning and awakening the patient from sleep, is found in brain tumor. Vomiting, choked disc and progress are added signs of this condition. The x-ray will help to locate the growth. Tumors of the nasopharynx are commoner than is believed. They are divided into the neuralgic group, the ocular group and the glossopharyngeal group. A rheumatic induration or nodular headache may be of many years duration. It is aggravated by tension and cold. The toxic headache is common, is of an aching character and is vaguely frontal. The nephritic headache may be due to chronic nephritis or to the hypertension accompanying the disease. The headache of hypertension is occipital or frontal and is bilateral. It tends to occur daily.

Headache is the commonest manifestation of migraine. It is started by many factors and its cause is unknown, but probably due to some inherent instability. This pain tends to shift and is increased by jarring the head and disappears when the patient sleeps. Do not try to treat this headache by a simple method. Simple living brings the best results. This ache can be lessened but not cured, as it is related to epilepsy. Neuralgia is either trifacial or glossopharyngeal. The trifacial type is usually paroxysmal over the fifth nerve only and is sharp and flashing. Sectioning of the nerve root is now one of the safest operations and should be employed in treatment, if the case is long standing. The glossopharyngeal type of neuralgia is the same type of pain but covers a smaller area.

Pain is thought to be due to differences of function, not of structure. The gastric crisis is a symptom of syphilis but is sometimes associated with migraine. The onset is sudden, with vomiting and pain near the midline, may be intense and attacks appear in sudden succession. There is no tenderness on pressure and the pupils may be irregular and unequal. This is true in ninety-eight per cent of syphilitic cases. There is generally a zone of impaired touch, pain or sensation or one or more may

be lost. The absence of the knee jerk has absolutely nothing to do with a diagnosis of syphilis.

Lightening pains are almost pathognomonic of syphilis of the nervous system. These pains are spot-like, flashing and appear in showers. They may leave the skin sensitive to light touch.

Pain in the extremities is frequently a neuritis, which is a disturbance of sensibility or motility. Paresthesia continues day after day. Alcoholic neuritis is entirely sensory. In the neuritis of leprosy, the nerve feels cord-like and diagnosis is made by examining the patient's face. Intermittent limping is due to painful cramping of the calves of the legs; on resting this disappears. It is usually in males, in the lower extremities. Intermittent claudication is due to anything which limits the blood supply, not to arteriosclerosis alone.

Many patients who complain of amputation neuromas are suffering from psychoneurosis. The memory of the pain lingers after it has disappeared. Many cases are termed neuralgic which are not at all connected with the disease. The same is true of neuritis diagnosis. Psychoneurosis may incapacitate a patient as often as disease and it is the duty of the physician to discover where the true site of the pain lies.

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#### PHYSIOLOGY OF THE ISLANDS OF LANGERHANS

This address was delivered by Dr. G. N. Stewart.

The excretion of the pancreas is important in digestion, and it has been known for a long time that this pancreatic juice was not all that the pancreas produced. The pancreatic juice is not essential to life, but the other function of the gland, when suppressed, means death. If one-sixth of the gland remains functioning, no noticeable affect is produced.

In 1889, when two workers took out the pancreas from dogs, the internal secretion was discovered, and the cause of diabetes was revolutionized. Previous to this it had been considered a disease of metabolism. In the hours following the pancreatectomy, the blood sugar mounts steadily. It is not possible for the blood sugar to mount from 0.1 per cent to 0.3 per cent in a minute as has been thought by some workers. You can not accelerate the hydrolysis of the glycogen of the liver. Emotional hyperglycemia, if it exists, is rare. This hyperglycemia, following pancreatectomy, never disappears in the animals used for experimental purposes, until just before death. There are other symptoms, as a ravenous appetite, and the animal usually drinks enormous quantities of water but his weight steadily diminishes and he becomes emaciated. Coma may come on or it may not. Wounds are more liable to become infected and heal less readily. These symptoms in dogs are the same as those of diabetes mellitus in man.

At the time of the discovery of the internal secretion of the pancreas, there was an attempt made to get this product but it was a failure. Three years later it was suggested that the Islands of Langerhans

were the seat of the secretion. Later it was thought the adrenals were connected with the elaboration of the substance. The flow of epinephrin was stopped in animals, and after recovery from this operation, a pancreatectomy was performed. The results were exactly the same whether the adrenals were present or not. There is no reason to believe that the adrenals influence hyperglycemia. When insulin is injected, it makes no difference whether the adrenals are present or not.

The discovery of insulin was overripe for discovery. Many attempts had been made, some on the same methods as those finally used. The great difficulty the discoverers in Toronto had was to purify the product sufficiently for the use of man. They got a product which easily knocked down the blood sugar in dogs but more purifying and still more purifying was necessary to get the product ready for man. Insulin is undoubtedly the internal secretion, or one of the internal secretions of the pancreas. The kinetic drive theory has been perpetuated to account for the action of the internal secretion of the pancreas but there is absolutely nothing in it.

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#### CLINICAL OBSERVATION ON THE EFFECT OF INSULIN

This paper was read by Dr. Reginald Fitz. It was published in full in *Northwest Medicine*, page 368, August, 1925.

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#### SYPHILIS OF THE HEART AND AORTA

This paper was read by Dr. James B. Herrick.

A thorough knowledge of syphilis is necessary to understand the other diseases. This is especially true of the cardiovascular system. Syphilis may affect the blood vessels in any part of the body. In no part is it more ruthless and life-threatening than in the aorta and heart muscle. It is generally thought that the first part of the aorta is most frequently affected and here are found the characteristic lesions of syphilis. Other portion may also show the lesions.

The disease affects the aortic valve, obstructs the coronary arteries and the aorta is subject to the full aortic output of the heart and yields to dilatation. Anginal symptoms are also frequent, so these call the attention to the pathologic changes in this portion of the aorta. The walls of the vessel are invaded through the vasovasorum. It is sometimes spoken of as specific aortitis.

The recognition of early cases of this disease varies with the clinician, his methods and accuracy. The reasons why it is so often overlooked is that there are no subjective symptoms many times, or they may be so light or obscure that they throw the clinician off his guard, or the symptoms may elude the most exacting examination. Pain is the commonest symptom and it seems to be aggravated

by exercise. There is a feeling of fullness and burning. This may be dismissed too abruptly in a neuroathenic individual. This may develop in the comparatively young and prove to be a late manifestation of syphilis. It is true that it is late but it may be much earlier than has been supposed. Clinical observation shows that it may develop in three to four years after the chancre. An early pain should be thought of as an aortitis. Dyspnea may be very annoying and present in ordinary effort, especially if there are changes in the coronary arteries. There may be a palpitation in an irritable heart and the pulse may vary markedly in rate. Some patients have malaise and loss of appetite. Diagnosis is often very difficult; especially is it hard to get information from the patient. Knowledge of a previous infection only gives a suspicion of syphilis.

A diastolic murmur over the base of the heart in the absence of rheumatic chorea and of any other valvular lesion in a young individual can assume syphilis with endocardial lesion. Aortic valvular involvement is not essentially the involvement in syphilis of the aorta; usually it is found one to one and a half inches above the aortic valve. The accentuated aortic second sound in leucic aortitis is sharp and metallic. This is often the only sign.

When syphilis attacks the aortic walls, there is a weakening and the aorta becomes larger, causing tortuosity. Clinicians vary as to the accuracy of being able to percuss a widened aorta. Also there is a difference in x-ray findings interpretation. The only safe way is to examine by percussion, palpation, fluoroscope, and picture, and map out as nearly as possible the course of the aorta and the heart, and distinguish between what is thought and what is found. Using the x-ray, not only the anterior and posterior should be examined but also lateral observations made.

The next step is to prove that the patient has had or has syphilis. Proof of syphilis before beginning the examination may lead the examiner to ignore or assume certain signs or symptoms. The patient often tries to conceal the fact of having the disease. Many patients, however have no idea that they have syphilis. Often syphilis is overlooked during a hurried examination. A stubborn sore throat, lightning pains, scars, rigid pupils, sabre-shins, etc., are all signs of syphilis. Nearly all cases of syphilitic aortitis give a positive Wassermann. A negative test does not, however, rule out the disease. If care be taken in the history, the physical examination and the blood tests, syphilis rarely escapes diagnosis.

The general impression of syphilis of the aorta has an unfavorable prognosis. This is probably due to the fact that the patient is not under observation until late in the disease. However, there are no statements contrary to the opinion. Case records are on file covering many years which would indicate that aortitis has been present for years.

The plea is to obtain an early diagnosis and effec-

tive treatment, that these late manifestations may be avoided. The way to treat syphilis is to avoid syphilis. This means effective prophylaxis; also, early, extensive treatment. Free dispensaries and institutes must in the following years show benefits in the decreased number of cases of aortitis and aortic regurgitation, etc.

The results of the treatment of aortitis correct, if not cure the valvular lesion. If the above is only approximate, treatment is indicated. Salvarsan, given in cerebral and cardiac affections, causes in some instances death. In beginning treatment, moderate doses of mercury and potassium iodide which are gradually increased. Then small doses of salvarsan. Many disregard all precautions and begin extensive treatment, practically disregarding the cardiac condition. Many clinicians state that aortitis is among curable diseases. It would seem that the small initial dose with gradual increase gives the best result. Early recognition and early treatment is the aim of all clinicians in order to get fewer aneurisms, fewer cardiac lesions and fewer coronary obstructions in the future.

#### SOME OBSERVATIONS UPON ARTERIOVENOUS ANEURISM, PART II

This address was delivered by Dr. Alan N. Drury

There is a cardiac enlargement in cases of arteriovenous aneurism. This is caused by the blood leaking through from the artery into the vein and throwing extreme work upon the heart. The general venous pressure is increased, which would be expected, but in cases followed by definite cardiac enlargement it is bad, if there is no increase in venous pressure. Experimentally in a dog, when the arteriovenous aneurism is opened, there is a fall in diastolic pressure; when closed, we get a change in the arterial but little change in the venous pressure. A sufficiently large fistula can be made so that there will be a rise in venous pressure which returns to normal when the aneurism is cut out.

It is said that the output of the heart is dependent upon the intake. Experiments on dogs confirm this deduction. The rate of flow of blood when the aneurism was opened or closed was recorded and it was found that about one-half of the blood from the large arteries is escaping through the leak into the vein. However, the conclusion is made that the cardiac output is the same, whether the aneurism is open or closed. After the arteriovenous aneurism is closed, it takes some few weeks for the venous pressure to adjust itself. It was impossible to get any change in the cardiac output either with the aneurism open or closed.

With the experimental fistula in a dog, when the aneurism is opened, there is a slight change in the arterial pressure but the venous readings remain practically the same and the cardiac output remains unchanged, that is, the heart of the dog does not work harder when the blood is shunting through the fistula. However, it is found that when the venous

pressure is raised only slightly, there is a slight increase in the cardiac output.

In a long experiment we may get a dilatation of the heart, especially if the heart is in poor condition. There is a corresponding decrease in the cardiac output. Therefore, it can be said that we can have arteriovenous aneurism with the output unchanged, associated with the cardiac enlargement due to the extra work.

In the question of blood supply to the heart in such conditions, one may reason that, if the arm and leg are deprived of one-half of their blood supply, then there is a like deprivation in the heart's supply. Experiments have shown that cardiac enlargement comes quickly and is mostly dilatation. So it is possible that in any form of cardiac enlargement, possibly poor blood supply plays a more important part than the extra work. This may possibly explain common enlargement of the heart in aortic regurgitation. Increasing arterial pressure by clamping the aorta causes back pressure in the lungs, resulting in an increase in the right heart, but this is not due to back pressure but to increased rush of blood through the pulmonary arteries. There is no back pressure until there is 250 or 300 mm. of mercury pressure. This might also suggest that it might occur when the output of the heart is diminished. Coronary artery constriction and enormous enlargement of the heart in severe anemia may be due to severe malnutrition. It is also seen in acute fevers. These views are put forth to show that the increased work is not the most important factor in cardiac enlargement. The conclusion has been reached that the work of the heart is a slight factor.

The work of the clinic is incomplete, due to lack of suitable material and it is hoped that any observation made may be recorded to further the work.

#### DEVELOPMENTAL ABNORMALITIES AFFECTING THE COLON, THEIR FAR-REACHING EFFECTS. SUGGESTED TREATMENT

This address was delivered by Sir Henry M. W. Gray.

The subject was dealt with, under these various headings, by a demonstration of lantern slides. These showed how the numerous and variable noninflammatory adhesions or membranes in the subhepatic region and right side of the abdominal cavity are derived chiefly from the right portion of the greater omentum. In these cases during early intrauterine life this part of the omentum becomes adherent to the caput and adjacent part of the colon and, during migration of the caput cecum, is carried across beneath the liver, where it tends to become adherent in more or less widespread fashion. In this way it may involve the duodenum, gallbladder, under surface of liver or posterior abdominal wall, one, several, all or none. If the last, the result may be a proximal colon and mesocolon with no fusion in the usual way to the posterior abdominal wall. Ordinarily, however, in cases of proximal coloptosis these adhesions have take place in varying degree. The caput cecum may be prevented by them from

leaving the subhepatic region, as is realized in cases of subhepatic appendicitis. In such event, the lower end of the ileum and its mesentery take the place usually occupied by the proximal colon and become plastered on to the posterior abdominal wall. But after such adhesion has occurred, the caput cecum usually "changes its mind" and proceeds to descend towards the ordinary position occupied by it in the normal adult. But the presence of the adherent ileum prevents "normal" adhesion of the proximal colon from taking place. The drawing out of that part of the omentum which has become adherent to the posterior abdominal wall below the liver gives rise to the formation of Jackson's veil or membrane. An unnaturally mobile proximal colon usually is associated with a more or less well-marked Jackson's membrane. The ileum is pushed downwards and inwards during the delayed descent of the cecum. The adhesions which it has contracted tend to prevent its descent, but usually they become elongated, and after the parts have become "set" in approximately a normal way, there results the membranous formation affecting the terminal ileum and mesentery which is known as Lane's membrane. If at an early stage, the appendix becomes caught up in the set of adhesions which go to form Jackson's veil or Lane's membrane, either a retrocolic or a sub-mesenteric appendix results. A fairly frequent association, therefore, is that of a mobile proximal colon with a retrocolic appendix, a Jackson's veil and a Lane's membrane.

The symptomatology which may be produced by these developmental abnormalities was discussed shortly. The reasons for the great variation in symptoms were pointed out. Certain special methods of diagnosis were demonstrated. The reliable sign of this condition is obtained by applying pressure about one and a half inches below and to the left of the umbilicus. Remember the amount of pressure. You may get a tenderness. Apply the same amount of pressure to the same place on the right and pain is less or absent. If the tenderness is present on the right side, it is a retrocolic appendix. If on the opposite side, there is an alleged membranous adhesion. If there is no tenderness, cannot say the above exist. These membranes affect the liver and gallbladder. If they are present, there will be an inflamed organ which is responsive to pressure. If the area can be pulled to one side, there is no adhesion, for if this exists there will be pain. The same is true in the iliac fossa. If palpation reveals a mass which can be felt when the hand is parallel to Poupart's ligament and this mass is tender on pulling, there is an adhesion present. Much judgment is required in dealing with these cases. The operation of colopexy is brilliant in results in the majority of cases in which it is indicated. Too extensive fixation is probably the most frequent cause of complaints afterwards. Standard procedures must be modified to suit the variations in the arrangement of the bowel. In treating these conditions, make a big six to eight-inch incision, paracentral. After stripping all the fat between the

colon and the abdominal wall, tie all the vessels and pass sutures to prevent the colon from kinking, being careful not to get too tight to interfere with the activity of the longitudinal band of the colon. The sigmoid loop tends to volvulus and is best excised.

#### PRESENT STATUS AND FUTURE PROSPECTS OF ENDOCRINOLOGY

This address was presented by

Dr. Lewellys F. Barker

In the consideration of thyroid disorders, there are two main types—Grave's diseases and myxedema. In Grave's disease there are four characteristic signs: (a) a persistent tachycardia, (b) enlargement of the gland, (c) tremor, (d) exophthalmus. Similar symptoms may be found in toxic adenoma and acute inflammation of the gland. There may be a tachycardia of 150 or more, with the absence of any other diseases. Prolonged poisoning may produce auricular fibrillation. The skin is moist and thin in texture. There may be a thin watery diarrhea. The respiratory symptoms are not characteristic and often have dyspneic shallow breathing. The basal metabolic rate is increased. The patient eats much food and steadily becomes emaciated. The mental symptoms are peculiar. There is restlessness, anxiety and alertness. There may be a lymphocytosis due to a hyperplastic thymus.

The diagnosis is easy in typical cases, but many mild ones are overlooked. However, a persistent tachycardia, tremor, sweating, rapid emaciation and eye signs should always suggest Grave's disease.

The treatment varies. Some operate and some use medicine. The general treatment consists in removal of the foci of infection, x-ray exposure, etc. In some cases Lugol's solution seems to do good. However, in a negative response to medicinal treatment, surgery should not be delayed longer than possible. The results of surgery in Grave's disease are in general good, even in advanced cases, but all require careful observation for the rest of life. On the whole, results of both medicinal and surgical treatment are good.

In myxedema there is the characteristic skin and hair changes, mental dullness, sensitiveness to cold, tendency to obesity, constipation, etc. The skin becomes thick, rough and a waxy hue to the facial skin which has an edematous appearance, but does not pit on pressure. There may be a double chin, pads of fat above the clavicle, fingers short and thick, "stove pipe" ankles, thoughts and speech slow; face appears stupid. The eyeballs become retracted, leaving narrow slits between the lids. The basal metabolic rate is very low. Thyroid priva should be suspected in children with abnormal obesity, dullness in school, etc. Small doses of desiccated thyroid often give marked improvement.

The main symptom of parathyroid deficiency is tetany and may be either manifest or latent. In the manifest tetany, there are spasms of certain groups

of muscles or the whole body may be affected. Latent tetany does not have spasms but it can be elicited by tapping the muscles. Cramps may appear in the face, hands or larynx, as there is a hypersensitivity of the motor nerves. Latent signs may be elicited by two simple methods—Trousseau's phenomena, obtained when taking blood pressure. With undue constriction on the arm, the hand goes into the "obstetric hand;" tapping the malar bone, the eye closes and the angle of the mouth is drawn up. If only one of the above signs is obtained, it is not of great importance.

In chronic tetany, there are certain trophic disturbances not generally recognized. Transverse furrows across the teeth indicate faulty enamel formation. There may be two or three furrows which indicate hyperactivity of the parathyroids.

If the parathyroid gland is not too severely injured or all removed, it may regenerate. The patient may be carried over the period by calcium. Transplants are not satisfactory.

The pituitary syndrome has caused much confusion during the last few years. There was the general supposition that acromegaly was due to hyperfunction of the gland, and dystrophia adiposogenitalis was due to hypofunction. The signs of acromegaly are usually very characteristic: prominence of the inferior maxilla and malar bones, broad nose, prominent occipital protuberance and sausage fingers. These usually develop slowly and some patients have cerebral symptoms before the bony changes. In women menstrual changes are usually the first sign. In dystrophia adiposogenitalis or Froehlich's syndrome, there is obesity of the abdomen, buttocks and thighs. The hands and feet are small, the skin smooth and the genitalia infantile. Many of these patients suffer from tumors in the region of the hypophysis. Within the last year or two, the cause has been thought to be a change in the nerves at the nearby base of the brain. The symptoms are the same; the cause is in dispute.

Addison's disease presents the suprarenal syndrome. The symptoms are an idiopathic anemia, bronzing of the skin, nervous disturbances, and the autopsy findings show tuberculosis, syphilis or tumors of the suprarenal glands. The signs of the disease are low blood pressure, asthenia, and profound digestive disturbances. In pure chronic cases termination is delayed many years.

There are three pictures found associated with disease of the glands. Adrenal hermaphroditism or pseudohermaphroditism, in which the female sex organs are present internally with the external genitalia being male. Or the reverse order may be true. The true sex depends upon the nature of the internal glands. Another picture is the premature puberty which develops at two to six years of age. Another picture is the marked overgrowth of hair in the female who is strong physically, man-like in strength and suggests the masculine type. This is suprarenal virilism. There is usually a disturbance of the menses at the onset. There is hair on the face, chest, abdomen and back with v-shaped pubic

hair. Not infrequently hermaphroditism is found in these cases.

Pancreatic disease or diabetes mellitus is due to lack of insulin from the Islands of Langerhans.

Gonadal syndrome appears when the ovaries or testicles have been removed, as these glands contain cells of internal secretion. There is more clinical evidence than laboratory in these conditions. The mental and physical characteristics of a eunuch are well known. If a child is operated upon, the penis and scrotum always remain small and there is never any sexual desire. If the operation is late, little atrophy occurs and there is some sexual desire.

The interest in studies of the endocrine glands extends all over the world. The findings are at present essentially clinical rather than laboratory. The terms hyper and hypofunctioning and dysfunctioning are merely working hypotheses and as yet are not proven entities. The endocrine glands are no doubt connected but we should look upon the syndromes as uniglandular rather than multiglandular. The remarkable results that are gotten with giving a uniglandular substance as in myxedema make changes in many parts of the body. In diabetes mellitus all signs yield to one substance, insulin, a uniglandular substance which gets a multiglandular result. Each gland may be the site of one or more of the above symptoms.

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#### ACIDOSIS

This paper was read by Dr. W. McKim Marriott

The body fluids are retained at a remarkably constant level. The reaction of the blood varies within a slight range. If the body fluids should become as alkaline as tap water or as neutral as distilled water, death would occur. This is maintained by the acid-base equilibrium of the body tissues and the blood.

Ordinarily considerable acids are being produced in the body by food metabolism, exercise, etc. The amounts of acids taken care of per day is one-half to two liters. This must be either neutralized or excreted. The body can normally take care of normal amounts. But when abnormal amounts of acids are produced, acidosis results, unless the body is able to care for them. There are two methods by which this is taken care of. In excretion, the acid phosphate of the urine is liberated and the base stays behind. Thus the body spares the alkali. The other way is by the kidney, when the acid changes to some neutral salt and the kidney makes ammonia out of urea. The ammonia takes up the acid salt in the urine and the sodium bicarbonate or carbonate is left. In spite of this protection against acidosis, the condition does exist, when there is a failure of the apparatus to work or when there is too much acid produced to be taken care of.

The causes for the overproduction of acids are varied. Too much exercise will cause this. A certain amount of lactic acid is produced with exercise and the sodium bicarbonate takes care of it and is given off in the lungs. Considerable degree of acidosis may occur, due to exercise, particularly if there

is a poor circulation. If there are pathologic changes in the lungs which prevent suitable exchange of gases, the acidosis is due to lactic acid and excess carbonic acid. Pneumonia has a certain degree of acidosis for the same reason. The presence of the acetone bodies, oxybutyric and diacetic acid, results in the condition. These bodies are produced, when there are insufficient amounts of sugar burned, with more fat than can be taken care of by the sugar. This is seen in starvation, due to the fats burning, or when sugar can not be used by the diabetic who has the sugar but can not burn it. They are formed when fats and sugars do not burn in proper proportions. This occurs in certain infections, particularly in childhood.

Children with a slight infection show the deep breathing of acidosis. This is due to liver function impairment. In the liver carbohydrate and fat are properly combined to burn completely. At autopsy, these patients are found to have fatty livers. Cyclic vomiting in children will give acidosis. The acidosis does not produce the vomiting but that is the result, probably of mechanical or circulatory changes. Whatever the cause, there is an accompanying disturbance of the liver, so that the combination can not be brought about and acetone is in the liver. It produces vomiting and acidosis. In kidney diseases, particularly interstitial nephritis, the function is impaired, the ammonia is not produced and the excretion is not as good, the acid phosphate staying behind and producing acid. There is no acetone in the urine, because the acid is due entirely to the kidney. In anesthesia, acids are formed, giving rise to acidosis. The condition may arise from a clear sky, as in one child with a neoplasm.

The pathognomonic feature is a hyperpnea, a deep breathing which may be rapid. The reason is that the bicarbonate is depleted and the carbonic acid must be kept low and this is done by blowing out. The carbon dioxide in the expired air is lowered. This can be tested for in the laboratory. Another feature which can be determined in the laboratory is determining the alkali reserve of the blood plasma.

A simple method of testing for acidosis is testing the acidity of the urine. This is done by adding a drop of bromocresol purple to a few drops of urine. The color remaining purple shows an alkaline medium. If the color is green, there may or may not be acidosis. Give the patient a teaspoonful of bicarbonate of soda; in one hour collect the urine and again add dye. If the green color still appears, there is an acidosis.

If the condition is of such a degree that it threatens life, the diagnosis is easy but otherwise is difficult. If the symptoms are marked, it must be treated and it is necessary to know the type. If it belongs to the acetone group, test for acetone in the urine, using ferric chloride for the test. This indicates diabetes and treat for it. If the cause is cyclic vomiting, give intravenously glucose, one ounce to each three pounds of body weight.

Large amounts of water are indicated in all these conditions. Alkali is given but with extreme care not

to produce an alkalosis. If the patient comes in with coma symptoms, then bicarbonate of sodium can be given intravenously to bring out the patient and to treat the underlying cause. If the acidosis is of the lactic acid type of cardiac cases, or infants with severe vomiting or diarrhea, there is an anhydration. Do not give alkali, give water for the cause is desiccation. If the acidosis is due to nephritis, give water and calcium lactate into the blood but do not give alkali as it is fatal, not being excreted.

Alkalosis can be produced by the therapeutic administration of alkali in too large amounts or by the removal of too much acid from the blood. Forced deep breathing may even go so far as to produce convulsions.

Excessive vomiting may be due to functional, congenital disturbance of the gastrointestinal tract. It occurs in children with pyloric spasm, etc. It makes some difference where the obstruction is. Food is taken in and acid is secreted from the stomach glands. The acid leaves the alkali in the blood and returns to the stomach. But if the acid is lost by vomiting, the bicarbonate is left in the blood. The result is that the blood chlorides are low and the bicarbonates are high through loss of hydrochloric acid and replacement of sodium bicarbonate. This is quite a common condition and is sometimes diagnosed as acidosis because it has a vomiting symptom but is never due to acidosis. If the intestinal obstruction is at the pylorus, the acid is lost. But if the obstruction is lower down, the patient vomits both acid and alkali which has been excreted into the intestine. Then the blood chlorides and the alkali are low and there tends to be not enough alkali for normal osmotic pressure, then the amino acids are held back in an effort to regulate the osmotic pressure.

In treating, give large amounts of water parentally and sodium bicarbonate, then give sodium chloride and the urine gets alkaline, due to the latter taking the place of the alkali which previously had replaced the amino acids.

The symptoms of alkalosis are a type of respiration which is just the opposite of that for acidosis. It is slow, irregular and shallow. Tetany occurs but not in all cases. When there is a disturbance between the calcium and magnesium balance in the blood, tetany appears. The obstetric hand is a symptom of tetany. The feet and the hands turn down. There may also be definite convulsions.

Treat the tetany due to too much alkali by giving hydrochloric acid or sodium chloride. This gives good results. A definite treatment is the giving of magnesium sulphate in ten per cent solution subcutaneously, giving two cubic centimeters per kilogram of body weight.

#### THE PRESENT STATUS OF ADENOMYOMA AND ENDOMETRIAL GROWTHS

This paper was presented by Dr. R. W. TeLinde.

Adenomyoma and endometrial growths as a subject are not new. It has occupied the minds of many gynecologists.

The adenomyomata of the uterus are divided into three groups: the diffuse adenomyoma, the subserous adenomyoma and the submucous adenomyoma. The diffuse adenomyoma in the uterus preserves the normal contour, shape and size of the organ. A sagittal section shows the neoplasm to be lined with endometrium and throughout the myomatous tissue are spaces filled with the old blood of menstruation. A few years ago there was a controversy about the origin of the glandular tissue through the adenomyomatous tissue. It has been traced to the lining of the uterus.

The symptoms are dysmenorrhea and menorrhagia. There is no bleeding between periods. By bimanual palpation the uterus is found extremely firm. The sites of these growths may be in the fundus of the uterus, the ovary, the bowel, in line of the abdominal incision. They appear within two or three months after the operation and become painful at menstruation.

The endometrial growth in the ovary is called the chocolate cyst of the ovary. The patient complains of dysmenorrhea and a mass is felt in the fornix. Operation reveals blood in the peritoneum and a cyst filled with chocolate fluid. The endometrial tissue in the ovary undergoes all the cyclic changes of menstruation.

The endometrial growths which are found in the intestines are from the ovary. The portion of the bowel nearest to this organ is the most liable to be implanted. Implants may occur in the uterine wall. Such growths have been produced experimentally.

There are two theories for how the endometrium gets into the ovary. For the theory that during menstruation cast-off pieces of endometrium travel up to the ovary and here become attached and grow, there is scant evidence, for in operations on menstruating women no blood has been found in the abdominal cavity and, also, the cells are probably too degenerated to grow.

When this type of neoplasm occurs, the characteristic clinical picture is dysmenorrhea of the acquired type which always occurs during the menstrual life. Bimanual palpation finds a small mass or an adherent ovary. These give the clinical syndrome. Gastrointestinal symptoms which are aggravated during menstruation are added points of diagnosis.

The treatment of such cases, especially of the bowel, is to remove the endometrosis of the ovary and the extensive growths will disappear. Therefore, an extensive operation is not justified.

The origin of the adenomyoma is undoubtedly from the uterine mucosa. The typical adenomyomata are identical with the uterine mucosal ducts.

#### OREGON

##### EASTERN OREGON DISTRICT MEDICAL SOCIETY

Pres., W. P. McAdory; Secty., C. J. Bartlett

Eastern Oregon District Medical Society held its annual meeting at Wallowa Lake, Aug. 4-5. A public meeting on the evening of Aug. 3, preceded the

scientific program. At this gathering Dr. Estella Warner of Portland gave an address on "Child Welfare Work." Dr. R. B. Dillehunt discussed "What it Takes to Make a Physician," while Dr. Calvin White presented the subject "Preventable Diseases."

During the following two days the society held enjoyable sessions at the lake, interspersed with papers on medical and surgical subjects.

Dr. R. B. Dillehunt, Portland, presented a paper on "Disabilities of the Hip Joint in Children."

Dr. H. B. Myers, Portland, read a paper on "Use of Essential Oils in Skin Diseases."

Dr. Harry Bouvy, Portland, presented "Sinus Complication with Influenza."

Dr. Otis B. Wright, Portland, presented a paper on "Importance of Early Diagnosis of Cancer."

Dr. J. Tate Mason, Seattle, discussed "Surgical Problems of Cancer of the Colon not Including the Rectum."

Dr. R. C. Coffey, Portland, read a paper on "Surgical Diseases of the Large Intestine."

## PUBLIC HEALTH LEAGUES

### WASHINGTON

"We have added another year of achievement to the good record of the Public Health League of Washington. Our publicity and educational program has gone forward. The drive made against legislative candidates unfavorable to the public health in many counties of the state last fall was successful. Anti-health candidates were defeated and those favorable to a vigorous legislative health program were elected. Six physicians were elected to and served creditably in the session at Olympia.

"The recent meeting of the legislature marked a body highly interested in health issues. This was shown in the passage by overwhelming majorities in the House and Senate of the measure, supported by the League, to revoke fake sanipractic licenses. Other measures supported by the organization received favorable consideration. It is expected that through the efforts of the League and its representatives at Olympia, in the second half of the legislative session, further advance will be made against quackery and healing fraud in Washington. Altogether we have made a constructive record."

This is the statement issued by Dr. E. Weldon Young, President of the Washington League, who will make an address before the League convention at the Olympic Hotel on September 17. At that time he will present in detail some of the achievements of the organization and offer recommendations covering its future needs.

The annual meeting of the League will be held in conjunction with the convention of the Washington State Medical Association and will be in the nature of a luncheon-banquet at the Olympic Hotel in Seattle. The Executive Secretary will present his formal report for the twelve months' period, officers will

be elected, and plans and policies for future activities will be discussed.

#### A Family Group

"Tell us how you do it," writes a medical leader from New York State. "Out there in Washington you have perfected some kind of an organization in which the physicians, dentists, pharmacists and nurses work together. And you get the results. But how could you help but make progress with such a league of effort?"

This is typical of many inquiries which have come into the League office recently, according to the Executive Secretary. Officials in Ohio, Illinois, Montana and other states have asked for information and data relative to the Washington plan. Several states have indicated the purpose of forming like organizations, being impressed with the health unity obtained here and the possibility of results.

The Washington plan involves the alignment of all health forces of the state under one leadership and an extensive educational and publicity campaign. It involves legislative activity, in that scientifically trained men must be sent to the legislature to assist in all health legislation, and also that all candidates antihealth in platform be defeated. An instrument for "education and legislation," the Public Health League offers a plan of health group unity and of practical utility that can be used successfully elsewhere.

#### Health Lectures

One of the features of educating the public and of telling the story of scientific medicine has been the course of lectures delivered by the Executive Secretary of the League before Rotary, Kiwanis, Lions, Exchange and other luncheon clubs. Mr. Jones in the last eighteen months has spoken to over 150 of these clubs, using the topics "Human Values" and "Economics and Health." These talks have been well received, and the League, in this manner, has reached in excess of 15,000 of the community leaders in every section of Washington.

A plan to be discussed at the state convention calls for the visit of Dr. Woods Hutchinson, popular medical writer and lecturer, to Washington and his appearance before chambers of commerce, luncheon clubs and women organizations over the state. In addition, it is expected that this speaker would draw heavily, if billed for public lectures at the various cities in the state. If he cannot be obtained, other speakers of note are available, who can assist in presenting an authoritative medical-health message.

#### OREGON

The Oregon Public Health League has resumed its activities for the purpose of bringing health matters before the people of the state. It scheduled an especially effectual series of public meetings at La Grande and Wallowa Lake on the evenings of August 3 and 4, in conjunction with the annual meeting of Eastern Oregon Medical Society. The La

Grande Evening Observer made the following comments on the meeting and the speakers appearing before it.

"Although the attendance was not very large at the public health meeting last evening at the high school auditorium, those present were very enthusiastic concerning the interesting program which was given. Dr. Estella Ford Warner of Salem, head of the child welfare department of Oregon, was the first speaker of the evening. She spoke of child welfare work and emphasized the use of the public health nurse and the school nurse. She showed that laws protecting the health of mothers and children are not a new thing by tracing them back for many years up until the present time. She urged the people of the community to support the health nurse, saying that she was the link between the home, the community and the physician.

"Dr. R. B. Dillehunt of Portland gave a talk on 'What it Takes to Make a Physician.' Dr. Dillehunt is from the medical school of the University of Oregon at Portland, and he spoke on the training of doctors and the different work they do in the medical school laboratories and the school hospital. Patients are cared for in this hospital from all over the state and receive excellent care, according to Dr. Dillehunt. He also spoke of the various serums used at the present time, infections of various natures and the saving of human life.

"Dr. Calvin S. White was the last speaker on the program and the subject of his talk was 'Preventable Diseases.' He explained how yellow fever, typhoid fever and other diseases of this nature have been almost entirely wiped out. He also spoke of the work now being done in experimental laboratories on cure and prevention of cancer, diabetes and diseases which, at the present time, seem incurable. Dr. White told of his early training as a doctor and the advancement of surgery since that time.

It is the intention to hold other public meetings from time to time throughout the state of Oregon. The executive secretary of the league recently received a letter from Dr. Walter H. Brown, director of the Marion County Child Health Demonstration, Salem, in which he says, speaking of the public meetings: "May I express my keen interest? After rather wide experience with the present status of medical practice, I am convinced that the organized medical profession must do just what you are starting in Oregon."

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#### DIABETIC RETINITIS

Cases of diabetes with retinal lesions, as well as those cases in which retinitis punctata centralis has been found without evidence of diabetes, are reviewed by Harry Friedenwald, Baltimore, (*Journal A. M. A.*, Aug. 8, 1925). Diabetic patients developing retinitis generally present the punctate form which is most marked in the region between the superior and inferior temporal vessels, but may extend to other parts of the retina. The spots are usually small, but may coalesce into lines or even large masses. They are usually accompanied by fine hemorrhages. The optic disks are of clear outline; there are no signs of retinal edema, and ill defined "cotton wool" spots are rarely found. Other conditions—thrombosis of the retinal vein, retinitis proliferans and profuse hemorrhages—are of rare occurrence. Retinitis punctata centralis was found in thirty-three cases with diabetes, and in eighteen without diabetes, of which latter, nine showed evidences of nephritis.

## BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

**Diseases of the Ear, Nose and Throat.** By Harold Hays, M. A., M. D., F. A. C. S. Associate Otolaryngologist New York City Hospital, etc. 495 half-tone and line engravings, and 55 full-page plates, nearly all in colors. Cloth, 961 pp. \$10.00. F. A. Davis Company, Philadelphia. 1925.

This book is especially written for the general practitioner and student. The text is supplemented by many good illustrations and beautifully colored plates. The beginner will find much good advice—how to equip a special office, to select instruments, and how to go about examining a patient's ear, nose, and throat. Diseases which are of most interest to the general practitioner are well described and the differential diagnosis thoroughly discussed.

Under ear diseases progressive deafness, a very important subject, is well considered and the physician admonished to take care of it early in life, when there is a better chance for cure. In chronic middle ear inflammations 1:1000 acriflavin and zinc ionization are recommended. Mastoid operations are described at length, but the author should have cautioned the would-be operator not to try a simple, still less a radical, mastoid operation before a few dozen had been done on a cadaver under experienced guidance. Many most important organs are clustered together in a very small surgical field in this region and dangerous or fatal surgical mishaps are inevitable, unless the operator masters the topography of this field. For this reason surgery of the internal ear is totally omitted and instead a splendid chapter is given on anatomy, physiology and pathology of the internal ear by Dr. Isaac Jones of Los Angeles.

When the writer explains how to use piston syringes, douches and drops in nasal diseases, he forgets the warning that the patient should not swallow when using those appliances, as the liquid may be pressed through eustachian tube in the middle ear and cause infection of it. A radical antrum operation cannot be properly performed by following the incomplete description of it in this work.

Tuberculosis of the nose, malignant growths and syphilis are only casually mentioned under differential diagnosis. Syphilis is usually first diagnosed on examination of the nose and this matter should have been more thoroughly discussed. Cancer of the larynx is described and illustrated, but not malignant growths of the nasopharynx. Not all growths of the nasopharynx are adenoids, as here intimated. Under tuberculosis of the mouth and throat the author promises a more extensive description of tuberculosis of the larynx in a later chapter, but forgets to fulfill this promise. Dr. Louis Fisher of New York has given, in a special chapter, a vivid description of diphtheria, and Dr. Chas. J. Imperatori supplies another on endoscopy of the upper air passages and esophagus.

KLEMPNER.

**Industrial Poisons in the United States.** By Alice Hamilton, A. M. M. D. Assistant Professor of Industrial Medicine, Harvard Medical School. Cloth, 590 pp. The Macmillan Co., New York. 1925.

This work is the outcome of an enormous amount of labor in personally studying cases of industrial poisoning all over the United States by the author, while acting as official investigator for the U. S. Bureau of Labor Statistics, and in correlating the large amount of literature on the subject to be found in the extensive bibliography at the end of each chapter. The poisons described are as follows: Lead, arsenic, mercury, copper, zinc, brass, manganese, antimony, cadmium and nickel; also selenium, tellurium, vanadium and phosphorus. Then the caustics, ammonia, chromates, and the acids, phosgene, cyanides, hydrogensulphide and carbonyl disulphide. Later chapters discuss carbon dioxide and mine gases, petroleum distillates, oil furunculosis and tar cancer. Next are considered methyl alcohol, tetrachlormethane, and other chlor and methyl compounds and nitroglycerine. The book closes with sections on benzene and its derivatives, the coal dye industry, the rubber trade, turpentine, tobacco; and finally, the prevention of industrial poisoning.

It is a treatise possessing unusual interest and value because it treats of a subject too little known by physicians, and one of vast economic importance. During the last year the reviewer has had under his care, four cases of so-called benzol poisoning with two fatalities. This is not at all a rare disease, although quite unknown to the reviewer at the time. Yet the diagnosis was plain, as they all originated in the same factory and there had been many mild cases. Benzol, or more rightly benzene, is not to be confounded with naphtha or the petroleum distillates. Benzene is obtained as a by-product in making illuminating gas and coke. It is used enormously in the rubber industry, in making rubber cement, tires, automobile brakes, cements for food cans, paints and varnish removers, and in a great variety of other manufactures. It is sometimes mixed with gasoline for motor cars. There is acute and chronic poisoning. The cases seen by the reviewer arose from the use of a cement for sealing cans. Purpura, various hemorrhages and anemia were prominent. There is first leucopenia, loss of platelets, and profound anemia, due to aplasia of bone marrow. In marked cases frequent transfusions and even splenectomy are indicated. It is a very interesting and serious disease, and is likely to increase. A considerable chapter is devoted to this important form of industrial poisoning.

There is an extraordinarily interesting account of the American disease, wood alcohol poisoning. It will be remembered that the act, providing for a revenue-free denatured alcohol in 1906, was brought about by the combined exertions of the Danbury hatters and the Society for Prevention of Blindness. But the law allows an admixture of as much as 20 per cent of wood alcohol, although denatured alcohol usually contains but 9.5 per cent of methyl alcohol. Even as little as 4 per cent of methyl spirits may cause blindness and the govern-

ment even discourages the use of a low percentage of wood alcohol in denatured alcohol by requiring that such be kept in bonded warehouses and only specified quantities be used at a time, etc.

More space is given to lead poisoning than any other and it has been found that lead occurs in the feces much oftener than in the urine. In 148 cases lead was present in the urine in 39, in the feces in 58, and 22 had lead in feces and none in the urine. Lead palsy or wrist-drop is rare, but weakness in the wrists the rule, with pain in lower abdomen and constipation, nausea and vomiting, and pain in arms or legs, thighs, and lower sacroiliac region are frequent. The lead line is present in about half the cases, especially after rubbing the edge of the gums lightly with gauze. Pallor, loss of weight, insomnia, headache and vertigo are common, and these symptoms, together with stippling of the red blood cells and presence of lead in urine or feces, determine a positive diagnosis. This book will have a large sale because filling a very distinct need, and undoubtedly is destined to become the standard authority on its subject with the medical profession.

WINSLOW.

**Diseases of the Lungs. Bronchi and Pleura.** By Frederick T. Lord, M. D., Visiting Physician, Mass. General Hospital, Instructor in Medicine, Harvard Medical School. Second Edition, Thoroughly Revised, with a Chapter on Pulmonary Tuberculosis. 107 Illustrations, 3 colored plates. Lea & Febiger, Philadelphia and New York. 1925.

Greater progress has been made in the diagnosis and treatment of lung diseases than at any other period, partly due to improvement in x-ray technic. But, as the author points out, it is always more instructive to endeavor to make a diagnosis from clinical signs before the x-ray is resorted to.

The article on atelectasis is of peculiar interest. The various causes are enumerated, as obstruction of the bronchi, entrance of air into the pleural cavity, etc., and there is a discussion of the causes of massive collapse of the lungs occurring after surgical operations, injuries to the trunk, after the use of morphine, hemoptysis with blood clot in the lungs and pneumonia. In most cases it is probable that the condition is dependent on obstruction of the bronchi with inflammatory exudate, but after abdominal injuries it may result from reflex disturbances of the respiratory nervous mechanism. The consideration of diagnosis of massive collapse is most instructive. The signs may simulate pneumonia, and also the symptoms, but the heart is displaced toward the collapsed side. Not the collapse per se but the causative condition is most important. This chapter will be found of unique value.

The difficulties in the diagnosis of pulmonary syphilis are enumerated and these are not by any means solved by x-ray, or even by autopsy in some instances. There is a notable chapter on bronchial asthma, and this in the home of Walker's original work on anaphylaxis in relation to the disease. The author states that there is no evidence in favor of neurosis as the cause. Heredity is an undoubt-

able factor, but the author thinks this due to inherited sensitization.

The writer takes a very conservative view of the relation of anaphylaxis to asthma. Thus, after reviewing all the evidence, he remarks: "In a considerable proportion of the cases, skin tests are negative or doubtful," and again, "Some relation to pollens, emanations of animals, acute respiratory infections and certain foods is suggested." Lord puts his finger on the weak spot, when he urges the making of skin tests for anaphylaxis in a large series of patients who have not asthma.

He finds 30 per cent of his cases preceded by an acute respiratory infection. The reviewer has been greatly disappointed with the skin tests, as aids to the etiology of asthma, but has seen the most brilliant cures following removal of nasal polypi, the cure of abscess in the antrum, and the removal of infected tonsils. After middle age, skin tests for food proteids the reviewer thinks useless. The author's article is most conservative and admirable, but he makes no allusion to the treatment by foreign proteids by a Dutch author who has recently devoted an entire volume to this mode of cure by hypodermic injections of milk and tuberculin. It would seem to the reviewer that the author may overlook an oversensitive bronchomotor center which is usually balanced by adrenalin secretion in its effect on the sympathetics to cause bronchial dilatation. The whole matter of etiology is of course hypothetical and the author is only concerned with facts and a practical exposition of his subject.

The chapter on pulmonary tuberculosis is a great addition to the former edition and is splendidly done, considering the difficulty of condensing a topic of such enormous importance and universality into a limited space. Positive diagnosis is based on finding, not one, but at least three or four tubercle bacilli and, in addition, one or more clinical signs, such as a primary pleurisy, hemoptysis, moist rales at the apex, or fine mottled increase of density above the level of the anterior third rib in the roentgenogram. Tuberculin, the author believes, is only useful in a very limited number of patients, and wholly as a mode of excluding tuberculosis. The initial dose under the skin should be one-half mg., and a dose as large as 5 mg. in infancy, or 10 mg. in adults, must eventually be given to positively exclude tuberculosis. A positive reaction to tuberculin occurs in 40 to 60 per cent of apparently normal adults. The superiority of the x-ray, in many old cases of fibroid phthisis and in miliary tuberculosis over all clinical signs and symptoms, is emphasized.

There is a very instructive chapter on subacute and chronic indurative pneumonia described under various terms, such as cirrhosis of the lungs, fibroid phthisis, cirrhotic or fibroid pneumonia, etc. These cases are very confusing as to etiology and one has to differentiate tuberculosis, syphilis, new growth, aneurism, inhalation of irritant dusts, and a great variety of other pathologic conditions.

Another valuable chapter is that on pneumoconiosis. Here again clinical signs may be all absent

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and yet the x-ray show the most striking and extraordinary roentgenograms to be seen. As Lord observes, all such cases should be regarded as subacute or chronic pulmonary infections and the chief point to determine is whether the infection is tuberculosis or not.

The chapter on pulmonary abscess and gangrene is very complete and satisfactory. Some 34 per cent of pulmonary abscesses are attributable to operations about the mouth, with inhalation of blood and infected material into the lungs. Tonsillectomy, extraction of teeth and removal of adenoids account mainly for this percentage. Medical and surgical treatment are carefully considered.

Altogether this book ranks as a standard and classic work on diseases of the lungs and pleura. There is another excellent modern treatise on the subject of diseases of the chest which, however, does not include treatment as does this work, although it does include disorders of the heart. This book of Lord's can be recommended most highly as being a conservative, scientific, very concise and complete textbook on diseases of the lungs and pleura.

WINSLOW.

**A Practice of Gynecology.** By Henry Jellett, M. D. (Dublin University), F. R. C. P. I. Consulting Gynecologist, Rotunda Hospital, Dublin, etc. Fifth Edition. Octavo; 744 pages; 417 illustrations and 15 colored plates. \$8.50. Philadelphia: Lea & Febiger. 1925.

This present edition of Jellett's popular textbook of gynecologic diagnosis and treatment has the earmarks of careful revision and well selected alterations and additions. More than 100 pages and 44 illustrations have been added to the preceding edition and include sections on gas inflation of the peritoneal cavity and of the fallopian tubes, ovarian transplantation, and implantation adenomata of endometrial origin. The work is recommended for its completeness as a text-book and for the manner in which all appropriate subjects have been brought up to date.

FORBES.

**Operating Room Procedure, for Nurses and Internes,** by Henry C. Falk, M.D., Assistant Attending Surgeon to the French Hospital, New York, etc., with 275 illustrations. 385 pp. \$2.50. G. P. Putnam's Sons, New York and London. 1925.

Part one of this volume discusses in detail the preparation of the operating room, presenting the most approved arrangements for dressings, instruments and other features so essential to successful surgery. The nurses and internes who follow these instructions will not go astray. Part two deals with operations. The most common of these are described in some detail, stressing the preparations of room and patient for each. The essential steps for the operation are also described. The purpose of this

volume is to promote the efficiency of the operating room nurses. Its thorough digestion on the part of the nurse should promote this object.

**The Medical Clinics of North America.** (Issued serially, one number every other month.) Volume IX, Number 1 (St. Louis Number, July, 1925). Octavo of 275 pages with 67 illustrations. Per clinic year (July 1925 to May 1926), Paper, \$12.00; Cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company.

Several of these clinical reports present interesting discussions of diseases of childhood. Engelbach presents a study of trichosis and pigmentation from an endocrinologic viewpoint. He describes conditions in children and adults where endocrine deficiencies are associated with cases of deficiency of hair. The complicated conditions of most of these cases are clearly shown. Hartmann reports a series of cases of diabetes in infants and children, illustrated by numerous charts and photographs describing the results of insulin and other forms of treatment. Olmsted reports several cases of amputations in diabetes with subsequent intoxications. There are other valuable, instructive clinics on many well known conditions.

**Methods in Surgery.** By Glover H. Copher, M. D., Instructor in Surgery, Washington University School of Medicine, etc., 232 pp. \$3.00. C. V. Mosby Company. St. Louis, 1925

This volume presents the author's routine and special procedures employed on the surgical service of the Barnes and St. Louis Children's Hospital. These are applicable to the needs of any surgical hospital. Considerable space is devoted to physical examination and taking of histories. Surgical ward routine and operating room routine are discussed at length. Standard principles and methods are described. Attention is given to postoperative care with suggestions for special conditions and diseases. Routine and special diets are also presented in detail. This is a useful volume by which one can familiarize himself with surgical hospital methods.

**The Normal Diet.** By W. D. Sansum, M. S., M. D., Director of the Potter Metabolic Clinic, Department of Metabolism, Santa Barbara Cottage Hospital, Santa Barbara, Calif. 77 pp. Illustrated, \$1.50. C. V. Mosby Company, St. Louis. 1925

This little volume comprises a simple statement of the fundamental principles of diet for the mutual use of physicians and patients. The author states that diet errors are responsible for minor ailments as well as more serious ones. There are chapters on caloric, protein, bulk, mineral, water and vitamin requirements of the body, one chapter being devoted to acidosis. Much information is contained in this small monograph.

# NORTHWEST MEDICINE

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## ADDRESS

### DEVELOPMENT OF THE STATE SOCIETY\*

ALFRED C. KINNEY, M.D.  
ASTORIA, ORE.

(In introducing Dr. Kinney, Dr. Calvin S. White, toastmaster, said: Fifty-one years ago this month there was organized in Salem the Oregon State Medical Society. At that time there were seven doctors practicing medicine in Portland and eleven in Salem. These men traveled at considerable inconvenience and organized a society. Selected at that time on account of his unusual fitnesses, the first president of that society was Dr. Kinney. It is right and fitting that at the fiftieth anniversary last year they reelected Dr. Kinney for his second term. I will introduce to you now the retiring president for the second time, Dr. Alfred Kinney of Astoria.)

It was always thus. You have always covered me with your kindnesses through all these years of our acquaintance; wherever I have come before you you have greeted me with the clapping of your hands and this tonight is not unusual. I thank you for it because I appreciate it deeply.

Dear old Rogue River, dear old Medford, our good fellows who live in Medford, including dear Dr. and Mrs. Pickel, we are partaking of your wonderful hospitality. You spread the beautiful flowers of this glorious valley before us, they strew our path. Bless you.

Fifty years ago, retiring then as president of the Oregon State Medical Society, I made a short ad-

\* President's Address, read before the Fifty-first Annual Meeting of Oregon State Medical Society, Medford, Ore., Sept., 2-4, 1925.

dress. A few days ago, looking over some of the old scraps that I had laid away, I came across this scribbled-out address and, if you will permit me, I will read a part of it to you. It is just as it was in those days. Remember that was a different day from this; conditions were different with the doctor and with me also; and in reciting or delivering that address I notice that I have scribbled in with my personal efforts a few shots, maybe, that had been fired at me and my replies. The next annual meeting of this society after its organization in 1874 was held in Portland in 1875 and I, then its retiring president, made a short address, parts of which I will read:

"Last year, in pursuance to a well circulated call, eighteen practicing physicians gathered in a conference at Salem, planned and organized this, the Oregon State Medical Society, and, following at a banquet, gave the newborn their hallelujahs with a prayer for a successful organization, which was from such an infantile beginning to grow stronger and stronger and function with greater ability and influence year by year throughout all time. And in our vision of its future will be an influence to the benefit of man, second only to that of the united efforts of the churches of the Christian religion."

"At that meeting you selected me to be your first president and in so kindly conferring that honor on me, did so with a reasonable expectation that I would, during this first year, largely visit the regular medical practitioners throughout the state and carry a personal appeal for a larger and more effective organization, preaching a reason why for its necessary existence. I have visited or met otherwise every regular graduated physician of the state (seven per cent letter) and as a result I believe about 60 per cent are very favorable to the organization and will become members. It is of the other 40 per cent I wish particularly to speak. Many of them need the spurs

of civilization roweled into them—suspicious, envious, jealous. 'If you are going to take that fellow into your society, I'll have nothing to do with it.'

"Some months ago the news was spread about that a physician was to be sued to collect damages because of alleged malpractice. The trial was to occur at a county seat not far distant and, being informed of the day, with another physician I drove out there and we took seats unobserved amidst other onlookers. The attorney, prosecuting the claim, put on two physicians as witnesses in behalf of his client's claim for damages. Number one did not seem to come up to the expectations of the prosecutor; he was 'wishy-washy' in his answers to questions, rubbing his hands all the time as though there was something on them he wanted to get off. He seemed to be trying to give a little damaging evidence against the defendant without saying so in so many words, so he was allowed to step aside. Number two was much inclined to act the same at first, but allowed the prosecuting attorney to draw him out, to say that he himself would not have treated the patient in the same way, and finally he stated, if his method of treatment had been applied, it would have had better results. Now the lawyer for the defense took his turn and his gun was loaded for bear. He fired three questions at doctor number two and broke three of his legs, leaving him to drag himself away with the other one, amidst the laughter of the judge and jury, and screeches of a court room full of onlookers. At the end the physician prosecuted came out of court with his ability as an able practitioner proven, and even in higher respect in that community.

"Who was that lawyer? David Logan. Make him a member of this society? Why yes, if you so desire, for what would Dave Logan love better in time of relaxation than to hobnob with such a bunch of real whole-souled good doctors? We investigated the ins and outs of that malpractice suit. It was started through the jealous promptings of the two physicians, witnesses for the prosecutor.

"Again let me say that these fellows and their like must be civilized and this civilization is the paramount duty of this society. We must buckle to it and dab ourselves with warpaint and go out and bring all of these physicians into this society and civilize them. Did I hear someone call out, 'Lord God! Would you bring those two fellows in here?' Yes, I feel we must do so, and all others of their ilk, and let me now call on you to help bring them in with all your might, for we will never have that real, genuine peace among the medical men of Oregon until we get all such men and break them in. With all such men in this society and trained to work, as they will be, such a thing as a malpractice suit against a member of this society will never again occur.

"How would we train such men? Let me tell you how. In looking you gentlemen over who are here today, I think I am fairly well informed of the premedical life of nearly every one of you, and I don't believe any one of you obtained his education with a silver spoon in his mouth. As a rule I find that all medical men worked for the cost of their education. Especially may I say that those of us raised in Oregon worked from infancy, and we played no ball games. With me, I think at one month old, I was herding the milk cows that browsed in the inclosed meadow up towards the corral to be milked. At five I was a full-fledged cowboy, riding the livestock range, observing if any neighbor cow-man was mistakenly putting his brand on our calves. At ten I was put on the wagon to haul freight with two mules, then with four and finally with six.

"Right there I got my lessons in team drilling. The mule team is a great civilizer. When we speak

of a mule, we mostly speak of him as a kicker, but they have something else than feet; they have ears, and they do their talking with them. The staid old wheel mule and the lead or check mule set the pace for all the others in the big team. The good teamster, knowing his team, has little to bother about. The load is on the wagon, the mules hitched up, he mounts into the saddle on his wheel mule, and with one motion, using both hands and heel, he slacks off the brake, checks the leader and touches the flank of the wheel. Bending forward with all mules taut against their collars, then a click and all step together. The wagon starts and in the distance of a half dozen rods the team has its swing. The old wheel mule, satisfied, starts up the conversation with his ears and soon all ears are going, turning forward and back, the teamster whiling away his time whistling some tune that keeps time with the step of the team. But should any one mule, by accident or freakishness, or a sudden spurt of meanness, break the harmony of the movement of the team, then up goes the ears of the wheel, the leader followed by all the other well behaved mules, and the infraction is quickly corrected. All is harmony again, for not even a mule can withstand the frown of the others of the team.

"So it will be here within the membership of the Oregon State Medical Society. No member will withstand the frown of this great team but rather he will measure himself by the measure stick common to the herd, and will find himself by that measure to be no better than his neighbor and he will seek culture, trying to assure himself he is just as good. Sympathy, good fellowship and a helping hand will prevail. Every member will strive not only to enlarge his own culture, but to increase his medical knowledge and impart whatever he may be so fortunate to gain to the others, to the end that all the regular practicing physicians of Oregon may be members of this society and become, just as I consider each and every one of you here present today to be, all-round good physicians. More as time goes on, our medical, cultured distinction will pass beyond the bounds of our society, and the people of Oregon will notice the lines of demarcation that will so prominently exclude those not educationally worthy to be members, and, when in need of medical assistance will always seek that assistance from members of the Oregon State Medical Society."

That was part of the address I gave fifty years ago. I wish you to consider the time in which it was given and my enthusiasm at that time as a boy, undertaking to do what seemed should be necessary that the physicians of Oregon should be brothers and love each other, for they had a great work to do. That one year, when I traveled about now and then to meet with the physicians of the state, I found among these few counties in the Willamette valley in the practice of physicians I visited, eighty-three cases of typhoid fever. That was outside of my own practice.

As a medical student I had taken a great deal of interest in the study of typhoid fever, because as the valley became settled up, in our little town typhoid began in the fall to occur quite frequently. In my own family three of my brothers were in two years' time down with typhoid, one dying.

After I had graduated and was in hospital service (I was glad to take a hospital service, including six months in the fever pavilion, that I might study typhoid fever), from that time fifty years ago I preached the control of typhoid is associated with drinking water. In 1841 one well infected most of the people in a town. One family did not have the fever because they didn't use the water in that well. A Yankee from Boston had come along, who became sick. He went to the little rooming hotel to live and probably infected that well. Of course the real cause of typhoid fever was not known, but Austin Flint proved this, that the toilet and the well should not come from the same hole. Too often in the Willamette Valley the toilet was within one, two or three rods of the spring and in many places the subsoil was gravel.

This society has done one great thing for the state of Oregon. It has almost wiped out typhoid fever. Through its influence I have got back what I intended to get. We secured the State Board of Health. God bless those members of the society who were members of the legislature and fought year after year until it was established. Some of them are here before me and I would almost love to call their names, but you all know them. A few of the college towns were losing a percentage of their students each year and the State Board of Health stopped that. They made those towns clean, but that is only a small part of what they have done.

The State Board of Health has taken the lessons of cleanliness and good health to the people of Oregon through their efforts. Especially during the first ten or twelve years they went out and talked to the people and I wish they would keep it up, because the people would rather get their lessons from the State Board of Health than from anyone else. Who is better than a member of the Oregon State Medical Society to talk to the people, provided he has the authority of the State Board of Health?

Fellow members, carry on this work. I know you will, and I know the members of the Oregon State Board of Health today are good all-round physicians, because they are thoroughly educated, as physicians today must be. There has been some little agitation and the question has been raised, can not we curtail the years of the student life. Today the medical student must have a foundation of chemistry that is thorough; he must have a foundation of physiology that is thorough, and he must eternally keep up. He must work out the prob-

lems of chemistry as he reads. He must be able to interpret the changes that are going on in the body cell, that he may be able to give it the food which it requires, that he may be able to give that body cell the atom it requires which will convert toxin to a nontoxin. How can he build up his patient unless he knows the requirements of the body cell and how to get that chemical substance into the blood stream that the body cell may pick from it the atoms of its nutrition? Therefore, I say that we cannot curtail medical education.

Another thing. To be a good physician one must have a good surgical technic that he may use his knife whenever it is necessary to do it, and use it effectively; and the surgeon must be one with a good medical qualification. He must be able to make a diagnosis of any disease of the human body. A patient can not be sent to half a dozen physicians to attend to one ailment. It is within the capacity of one man to master the whole thing, if he will go into it and stay by it.

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**Poor Surgical Risks.** William Thalheimer, Milwaukee (Journal A. M. A., Sept. 12, 1925), discusses some of the results obtained by laboratory investigations of several types of patients for whom the hazard of a major surgical operation is more serious than for the average patient. This discussion is of laboratory data, their significance and their indications for certain preoperative and postoperative treatment of these patients. Thalheimer pleads not only for the study of these patients with laboratory methods, but especially for the interpretation of laboratory findings by a person who is capable of interpreting them, be he a surgeon, an internist or a laboratory worker. Probably the factors which influence the postoperative course of patients more than any others are those which have to do with renal function. Although an increased blood pressure does not necessarily indicate organic renal disease, it will be found that most patients with this condition show subnormal renal function after operation. Chemical examination of the blood is most important, for evidences of retention of nonprotein nitrogenous substances (urea, creatinin, etc.) are of great significance. Furthermore, the determination of the quantitative secretion of urea is not given the attention it deserves. Many of these patients who have only a slight degree of anemia, such as would cause no concern in the average patient, should receive transfusions both before and after operation. Next in importance to these factors is the furnishing of adequate carbohydrate nourishment to the patient. This can be accomplished safely by the intravenous route. Instead of the usual physiologic sodium chlorid solution, Thalheimer gives 100 gm. of dextrose a day in the form of either a 5 or a 10 per cent solution. Sometimes twice this amount is given. By this means, the most important energy-giving constituent of food is supplied and is delivered into the circulation, where it is carried immediately to all the cells for either use or storage. One group of patients present themselves for operation after they have been vomiting for a longer or shorter period of time. These patients are usually in extremely poor condition and have either an acidosis or an alkalosis. The presence of acetone and diacetic acid in the urine (ketonuria) usually indicates an acidosis, but these substances may be present during alkalosis.

## ORIGINAL CONTRIBUTIONS

### NEPHRITIS

SOME NEWER VIEWPOINTS CONCERNING ITS NATURE  
AND TREATMENT\*

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The usual viewpoint concerning nephritis is that certain lesions of an inflammatory or degenerative nature occur in various portions of the kidney and that, as a result, renal function is impaired, and water, salts and various organic substances are retained in the body and give rise to the symptoms of uremia, to edema, increased blood pressure and various changes in the heart, lungs and eyes. Patients present a certain group of symptoms, and at autopsy the kidneys are found to be regularly involved; hence it is assumed that the renal lesions are the cause of the symptoms. This common view of the nature of nephritis may well be questioned, as in many instances it fails to provide a full explanation of the condition.

A more reasonable viewpoint in the light of our present knowledge is that the various forms of nephritis are essentially general diseases which affect other parts of the body as well as the kidneys, the changes throughout the body being the result of the same injurious agents that have affected the kidneys, the greater intensity of the lesions in the kidneys being due to greater concentration of toxic agents at the point of excretion from the body.

Nephritis is not a single disease. There are several forms of nephritis which differ so greatly in etiology, pathology and symptomatology as to constitute essentially different diseases. Combination forms occur, it is true, and there may be a gradual transition in type. During early life the various forms of nephritis occur as clear-cut conditions and can, therefore, be studied to greater advantage in children than in adults.

The two common forms of nephritis occurring during early life are the parenchymatous or tubular nephritis, or, as it is sometimes called, "nephrosis," and the hemorrhagic or glomerular nephritis. Both of these forms of nephritis, as they occur in children, are usually the result of infections occurring in the body elsewhere than in the kidneys. The infections in question are of a more or less specific

nature and lead to general cellular damage or to widespread capillary involvement.

#### PARENCHYMATOUS NEPHRITIS OR "NEPHROSIS"

We will first consider parenchymatous nephritis. In this condition the onset of symptoms is usually insidious. There is a gradual increase in the edema, which may ultimately become extreme. The urine decreases in amount and although it may be dark colored, it is never "smoky." Large amounts of albumin are present. There are numerous granular casts. The chlorides of the urine are greatly diminished and may be entirely absent. The phenolsulphonaphthalein excretion is practically normal. Systolic blood pressure is not elevated. Acidosis does not occur. The eye grounds are normal. Examination of the peripheral capillaries of the skin by the method to be described later reveals no abnormalities. There is a secondary anemia. The protein of the blood serum is greatly diminished. Lipemia may be present. There is no retention of nonprotein nitrogen. The chlorides of the plasma are low. True uremia does not occur. The nutrition of these patients invariably suffers, though the true state of nutrition may be masked by the edema. Patients with parenchymatous nephritis have very little resistance to infections of any sort, and death, when it occurs, is usually the result of intercurrent infections.

Not all patients with parenchymatous nephritis succumb. Many recover completely. The edema disappears and the urine becomes entirely normal and there are no remaining signs of any sort to indicate that permanent kidney damage has occurred.

The kidneys in this form of nephritis are large and white without petechial hemorrhages. Microscopically there is seen an extensive degeneration of the cells of the renal tubules, and the lumens of the tubules are filled with degenerated material and wandering leucocytes. There are no bacteria present.

Tubular nephritis occurs in toxemias due to a variety of cases, but as seen in children it is more likely to be the result of infections with the staphylococcus than from any other cause. In practically all of the cases of severe parenchymatous nephritis which we have observed there has been a staphylococcus infection of the nasal accessory sinuses, especially of the maxillary sinuses. We have regularly observed that increased activity of the infections was accompanied by an exacerbation of all of the symptoms of nephritis and, further, that successful treatment of the nasal sinus infections was regularly followed by rapid improvement and complete

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disappearance of all of the symptoms of nephritis. Forms of treatment other than those directed toward the infection were of but temporary benefit. The causal relationship between infection and nephritis in these cases seems definite.

The next question that arises is the manner in which the infection brings about the changes occurring in the body. There is no evidence that septicemia occurs, as blood cultures from patients in our series have been invariably negative. It appears rather that toxic substances are absorbed from the focus. Inasmuch as organisms isolated from the sinuses and grown in pure culture do not produce the toxic material, which there is reason to believe is the active agent, we are forced to conclude that the substance in question is produced through the action of bacterial toxins on the body cells.

Whatever the exact nature of the poison produced as the result of the staphylococcus infection of the nasal accessory sinuses or elsewhere, the effect cannot be explained purely on the basis of destruction of the cells of the renal tubules. There are many features of the condition that cannot be explained on the basis of insufficiency of renal function. Even complete removal of both kidneys does not result in the symptoms observed. Edema does not follow nephrectomy unless certain poisons, such as uranium, are administered. Furthermore, extensive degeneration of the renal tubules, such as may be brought about by various poisons, is not associated with edema or the other characteristic symptoms of parenchymatous nephritis.

In parenchymatous nephritis the ordinary tests for renal function fail to demonstrate a lack of efficiency on the part of the kidney. On the other hand, there is definite evidence that the tissues of the body behave in an abnormal manner. Sodium chloride is taken up by the tissues and retained to such an extent that the blood chloride falls to lower than normal limits. If a tourniquet is placed around an extremity so as to produce stasis, fluid passes from the blood into the tissues, whereas in normal individuals the passage of fluid is in the opposite direction. Furthermore, salt solution, injected subcutaneously, is not absorbed into the blood as rapidly as in normal individuals, but is more quickly taken up by the surrounding tissues. Support of the idea that the changes are primarily in the body tissues is given by the fact that we have observed the occurrence of edema before any changes were observed in the urine. Volhard has shown that if in cases of edema, elimination of the edematous fluid

occurs, sodium chloride and water move first from the tissues to the blood and lead to a temporary dilution. Renal excretion then follows.

In order to explain the edema it is necessary to assume some other factor than the retention of water and salts by the kidney. One explanation is that the colloidal osmotic pressure of the blood is lowered, due to the low blood protein. It has been demonstrated that such changes in the colloidal osmotic pressure do lead to edema in experimental animals. It is furthermore true that the proteins lost by way of the urine are those which are more especially concerned in the maintenance of normal colloidal osmotic pressure in the serum. In general, edema usually tends to disappear as the blood protein approaches normal, and becomes more marked when the blood protein is low. However, as already mentioned, edema may be present even before protein has been lost by way of the urine.

There is one important and constant finding in all cases of parenchymatous nephritis with edema, and that is the observation of Clausen that the surface tension of the serum is lowered. The surface tension of the serum is surprisingly constant in normal individuals. It is very slightly lowered in the serum from some cases of jaundice and from some cases of eczema, but not to the same degree as in parenchymatous nephritis.

The determination of the surface tension is easily made by weighing three drops of the serum according to the method of Harkins. A full discussion of the surface tension phenomena in nephritis appears in recent articles by Clausen.<sup>1, 2, 3</sup>

Clausen has found that there is a substance present in the blood of these patients which is responsible for the lowering of the surface tension. This substance is also excreted in large amounts in the urine. The substance is not present in the blood or urine of normal individuals nor of patients with edema due to cardiac disease or to other forms of nephritis. The surface-active substance disappears from the blood simultaneously with the clearing up of the foci of infection and the disappearance of the edema. The substance in question seems to be definitely associated with the presence of infections, and to be the important factor in the production of edema. The substance in question is neither lecithin nor cholesterolin, nor is it one of the usual proteins. It seems to be, however, a protein derivative.

Clausen<sup>4</sup> isolated a considerable amount of the surface-active substance from the urines of our

patients and studied its chemical and physical properties. Most interesting is the fact that the substance increases the permeability of membranes either natural or artificial; e.g., a colloidion sac treated with a solution of the surface-active substance becomes readily permeable to proteins. It is likely that the permeability of the kidney to the proteins of the blood is the direct result of the action of this substance. Changes in the permeability of various cell membranes of the body necessarily lead to a redistribution of proteins and salts and such changes in permeability may well be the cause of the edema observed.

The first step in the successful treatment of parenchymatous nephritis is to locate and treat the infection responsible. In the case of children the infection is likely to be in the nasal accessory sinuses. In making the diagnosis of sinus infection, direct inspection of the nasal mucous membranes by both anterior and posterior rhinoscopy is necessary. The x-ray is also of assistance in diagnosis. For more detailed discussion of diagnosis of sinus disease in childhood the reader is referred to articles by Dean<sup>5, 6</sup> and by Arbuckle.<sup>7</sup> In treating sinus infections it is usually necessary first to remove enlarged and infected tonsils and adenoids so as to allow for adequate drainage and prevent reinfection, and this may be all that is necessary in some instances. It is often, however, necessary to irrigate the maxillary sinuses and at times more radical operations on other sinuses should be performed, but it is well to bear in mind that these patients have a lowered resistance to infection and consequently radical surgical procedures should be resorted to only when absolutely necessary. Local treatment with such agents as dilute mercurochrome solutions is of value in preventing reinfection. When the infection can be located and cleared up, recovery from the nephritis may be anticipated, irrespective of other methods of treatment.

Regulation of the diet is important, particularly on account of the poor state of nutrition and the fact that large amounts of protein have been lost from the blood by way of the urine. A *high* protein diet is indicated. A young patient should receive from 2 to 4 grams of proteins per kilo of body weight per day (1/30 to 1/15 oz. per pound). A high protein feeding does not aggravate the symptoms, and indeed often leads to a disappearance of the anemia. The best forms of protein are milk, eggs and meat; vegetable protein being incomplete, is of less value. Green vegeta-

bles, however, should be given daily on account of the tendency to anemia. Additional iron may also be given to advantage. Cod liver oil is of value in increasing the resistance to infection.

Salt and water need not be limited except when the edema is of an extreme degree. It is true that limitation of salt and water does tend to decrease the edema, but the benefits are entirely symptomatic.

Purgation and sweating accomplish no good purpose and produce considerable discomfort. Blood transfusions are of great value in restoring serum protein and in overcoming anemia. The intravenous injections of hypertonic glucose solutions or of acacia lead to but temporary diminution in edema. The general condition is unaffected.

Diuretics of the purin series (e.g., diuretin) occasionally produce marked beneficial effect. It is interesting to note that this diuretic increases the surface tension of the blood and in that way has an action directly opposed to that of the peculiar surface-active substance present in the blood of these patients. In the presence of active infections the effect of the purin diuretics is very slight but no harm seems to be caused by their use.

After the clearing up of the infections and the disappearance of the symptoms of nephritis, all measures which tend to increase the patient's resistance to infection and improve his nutrition are indicated. Heliotherapy and out-door life may be mentioned as especially valuable measures.

#### HEMORRHAGIC OR GLOMERULAR NEPHRITIS

Let us now pass to the consideration of another form of nephritis, and one differing so greatly from the preceding form as to constitute an essentially different disease.

The symptoms of glomerular nephritis begin abruptly. The patient appears acutely ill and listless. The condition is likely to be preceded by a febrile disturbance and often by an acute sore throat. Definite uremic symptoms may appear at the onset. The urine is likely to be diminished or even entirely suppressed for a short period. In certain cases, on the other hand, there may be a copious diuresis. After the first few days the urine volume is likely to be within normal limits.

The most striking characteristic of the urine is its "smoky" appearance. This is due to the presence of the blood. Later the urine may be apparently clear, but blood cells are found microscopically. The presence of blood is the characteristic urinary

finding in this form of nephritis. Albumin is present in but moderate amounts. Microscopically there are a few granular or blood casts and later hyalin casts. There is a secondary anemia but the serum protein is not reduced. There is definite nitrogen retention, which may be extreme (200 mg. or over per 100 c.c. of blood). The blood chlorides are moderately increased in amount. *The surface tension of the blood is normal.* There is a diminished excretion of phenolsulphonephthalein; the blood pressure is invariably elevated at some stage of the disease and may be very high. Acidosis accompanied by air hunger is seen in the more severe cases.

Edema is rarely marked. There may be some puffiness of the eyelids, but the extreme degree of edema seen in the cases of parenchymatous nephritis is not observed. In the majority of cases the symptoms subside within a relatively short period. In a certain number of instances, however, the symptoms continue, and the patient ultimately dies with the symptoms of uremia and cardiac failure. Uremic symptoms, occurring at the onset of the condition, are of less grave significance than similar symptoms occurring later on.

The kidneys in this condition are large and red in the case of patients succumbing in the early stages of the disease. In the later stages the kidneys are large and white with petechial hemorrhages. In cases of very long duration the kidneys become definitely contracted. Microscopically the renal glomeruli are congested in the early stages, and later there are extensive changes in the glomeruli which may lead to practical obliteration. In protracted cases there is some small round cell infiltration and fibrous tissue formation.

Glomerular nephritis, like parenchymatous nephritis, appears to be the result of infection. In glomerular nephritis, however, the organism is almost invariably a hemolytic streptococcus. The most frequent foci of infection, in our series of cases, have been the tonsils, middle ear and mastoid, and only occasionally the nasal accessory sinuses. Streptococcus infections elsewhere may produce the same condition. Apparently the damage to the kidney is not the result of septicemia with lodgment of the organisms in the glomeruli. Although in another form of glomerular nephritis (that occurring in the course of subacute bacterial endocarditis) there are actual emboli in the glomeruli. The changes in the glomeruli appear to be the result of the action of the streptococcus toxins. Other portions of the body, as well as the renal

glomeruli, are affected. The damage is greater in the kidney, possibly on account of the concentration of toxins at the point of excretion, but the capillaries throughout the body are also affected.

The evidence of change in the capillaries of the body may be best observed in the surface capillaries at the base of the finger nails. These capillaries can be readily observed by first moistening the skin with glycerin or cedar oil and then examining the field under the low power of the microscope in a beam of direct light. Even in the very early stages of hemorrhagic nephritis and at times before the occurrence of albuminuria or hematuria, the characteristic changes in the skin capillaries may be observed. There is an increased tortuosity of the vessels, a spastic contraction of the arterial limbs and a distention of the venous limbs. Following an attack of hemorrhagic nephritis the capillaries often become normal again, but in prolonged cases the capillary alterations remain and permanent changes are likely to result. When the surface capillaries are severely damaged petechial hemorrhages may be observed. In certain cases of streptococcus infection the involvement of the systemic capillaries may be greater than that of the renal glomeruli, the changes in the peripheral capillaries being out of proportion to the urinary findings.

It is our impression that during early life and especially during infancy the capillaries of the gastrointestinal tract are much more likely to be damaged by infection than are the renal capillaries, if one can judge from clinical and postmortem evidence. As is well known, involvement of the skin capillaries occurs in scarlet fever before or in the absence of renal involvement.

Thus we have seen, in the case of a young infant suffering from a low grade streptococcus infection of the mastoid, slight hematuria and albuminuria, moderate hypertension and marked and continuous gastrointestinal symptoms. The gastrointestinal symptoms were vomiting and a profuse watery diarrhea, continuing despite suitable feeding. There was a condition of hydrolability, i.e., failure to retain water, even when large amounts were given parenterally. There was no nonprotein-nitrogen retention. The symptoms persisted for six weeks, but completely disappeared after drainage of the infected mastoid antrum. It is to be expected that an agent toxic to the capillaries would exert its greatest effect at those places where the capillary activity is greatest. In the infant the functional activity of the capillaries of the gastrointes-

tinal tract is relatively greater than in the adult, and it is possible that this explains the greater involvement of the gastrointestinal capillaries which seems to occur.

It is probable that damage to the renal glomeruli, which is at all severe, leads to irreparable changes. Recovery, or regeneration, does not seem to occur as in the case of simple degeneration of tubule cells. Certain glomeruli, or portions of the capillary loops in the glomeruli, may be completely destroyed, yet a sufficient number of functionally active capillaries may remain to carry on efficiently the work demanded. If, however, the infection which gives rise to the capillary involvement does not clear up but remains, and there is thus continued and repeated capillary damage, the permanent or irreparable changes produced may be sufficient to lead to a diminution of renal function to a degree incompatible with life.

The symptoms of glomerular nephritis are to be explained on the basis of general capillary damage as well as the special capillary damage resulting in renal insufficiency. The hypertension seems to have its most logical explanation in the general capillary constriction, which is certainly present in all severe cases. When we consider that there are, according to Krogh, as many as 700 capillaries in a square section of muscle as large as the head of a pin (0.5 sq. mm.) and as many as 20 capillaries in the same area of the skin, it is readily understood how any considerable general constriction would well lead to hypertension. On the other hand, we know that nephrectomy alone does not lead to hypertension.

The edema is doubtless due to a number of causes. A simple explanation would be that it is due to retention of sodium chloride, resulting from impaired renal function, but such explanation is not altogether satisfactory. Edema does not occur following nephrectomy, unless capillary poisons are administered. Furthermore, administration of hypertonic saline does not always lead to edema. Further, it has been shown by Volhard that there are definite variations in the exchange of salts and fluids between the blood and the tissues in the presence of hemorrhagic nephritis and that these changes are of a different nature than those observed in normal individuals and in nephrectomized animals. Capillary damage leading to changes in permeability seems to be a more important factor in the production of edema than the mere retention of small amounts of sodium chloride. An excellent discus-

sion of this aspect of the problem is contained in a monograph by Leo Loeb.<sup>9</sup>

It has been suggested by Martin H. Fischer<sup>10</sup> and others that the edema is the result of acid accumulation in the tissues, which leads to swelling of the cellular colloids. The chief objection to this theory, as pointed out by Loeb, is that there are no significant alterations in the hydrogen ion concentration of the tissues, and further that, if there were a considerable increase in the hydrogen ion concentration, the result would be a diminished capacity of the colloids to hold water. Furthermore, the seat of the edema is not primarily in the parenchyma of the organs but in the interstitial tissue. Additional evidence against the assumption of Fischer is that the administration of alkali is especially likely to increase the edema of patients suffering from glomerular nephritis and that the administration of calcium chloride or ammonium chloride substances that lead to an increase in the acid present in the blood results in a decrease in the edema. In chronic cases of glomerular nephritis with hypertension, cardiac failure is likely to occur ultimately and as the result of such cardiac failure edema occurs, as in any other form of cardiac insufficiency.

Mention has been made of the fact that some degree of acidosis is observed in severe cases of glomerular nephritis. This acidosis is in part explained by failure of the kidney to excrete acid phosphate. There is also the factor of capillary damage. Evidence has been brought forward by Wallace and Pellini<sup>11</sup> that the acidosis of experimental uranium nephritis is the result of capillary injury, inasmuch as it may be brought about in nephrectomized animals by the administration of uranium, which is known to be a capillary poison.

It is not possible to discuss fully the subject of uremia at this time. Suffice it to say that the symptoms of uremia cannot be explained on the basis of renal insufficiency alone. True uremia does not occur in nephrectomized individuals nor in those in whom, as the result of mechanical blocking of the urine, there is a retention of nonprotein-nitrogen to 200 mg. or over. This has been repeatedly observed by various investigators and corresponds with our own experience. Hypertension may well be a factor in producing the symptoms of uremia, as such symptoms are rarely observed except in the presence of hypertension. Foster has brought forward excellent evidence that a base extractable from the blood of uremic patients is responsible for the symp-

toms. It seems likely that this substance is not a normal constituent of the body, as it is not present in the blood of nephrectomized individuals. It would seem probable that the substance in question is the result of some infectious process, perhaps the same process that is responsible for the development of the general capillary changes.

The first essential in the treatment of glomerular nephritis, as in parenchymatous nephritis, is the removal of possible foci of infection. In the case of such acute infections as mastoiditis, operation is often followed by a prompt disappearance of symptoms. It is interesting to note in this connection that in infants chronic infection of the mastoid antrum without the usual local signs is of frequent occurrence. A common focus of infection in older individuals is at the roots of the teeth.

Operation on acutely infected tonsils and adenoids is to be avoided, as an exacerbation of the symptoms and occasionally septicemia occur as a result.

The infection responsible for a continuance of the symptoms of glomerular nephritis may be, and often is, of a low grade. There may be no fever, and little if any leucocytic reaction. In chronic cases of glomerular nephritis, where permanent damage has been done, the effects of operative treatment of possible foci are, of course, unsatisfactory.

The general care of the patient is of great importance. Further damage to the capillaries should be avoided and no undue strain put upon them. Excessive muscular exercise, by increasing the circulation, has a distinctly bad effect. Patients in the acute stage, and for some time afterwards, should remain at rest in bed. Chilling of the body surface results in peripheral vascular constriction and this, of necessity, leads to some engorgement of the visceral capillaries. Furthermore, chilling favors the development of fresh infections in the nose and throat.

The dietetic treatment is also of great importance. There is definitely impaired renal function with retention of nitrogenous end-products, hence a low protein diet is essential. The minimum protein requirements of the body, however, must be covered. The patient, if a young child, should receive approximately 1 gm. of protein per kilo of body weight per day (1/60 oz. per lb.). Older children or adults should receive somewhat less. This protein is best supplied in the form of milk, because of the fact that milk protein is a complete one and can, therefore, be utilized with a minimum waste and leads to the lowest possible

nitrogen excretion, and, further, because milk contains no extractives which might conceivably augment capillary damage. It is a matter of common observation that the addition of other proteins, especially vegetable protein, to the diet of patients with hemorrhagic nephritis is often followed by an increase in the hematuria.

Calories, in addition to those furnished by milk, are necessary. Indeed, much harm has been done to nephritics by underfeeding. The nutrition must be maintained. The additional calories are supplied by means of fat (cream, ice cream) and carbohydrate (fruit juices and sugar). Cereals containing much protein are inadvisable, but some starches (especially arrowroot starch) which are low in protein, may be given in considerable amounts.

As soon as possible the diet should be increased to meet the patient's full protein requirement, but this should not be done as long as there is hematuria, or a high or rising blood nonprotein-nitrogen. The most suitable forms of protein which may be added to the diet are curds and eggs. One to three eggs a day may be used in any form. Some time after the disappearance of hematuria, meat once a day may be added. There is no good evidence that one form of meat is more deleterious than another. Meat extractives, however, such as soup, broths and meats extracts, are of no value and may be harmful. Of the vegetables, spinach is of special value because of its iron and pigment content.

The reappearance of hematuria is an indication for reduction of the diet. It is well, in all cases of severe hemorrhagic nephritis, to put the patient on a "sugar diet" for periods of from one to three days at intervals. The urine can often be rendered blood-free in this way. On a "sugar day" the patient receives 10 gm. per kilo (1/6 oz. per lb.) of cane sugar in 1000 c.c. or 1500 c.c. (2 to 3 pints) of fruit juice, and nothing else.

The amount of salt in the diet should be low, but salt need not be entirely eliminated except when marked edema is present.

It is inadvisable to restrict the water intake of patients with hemorrhagic nephritis, even in the presence of edema. It has been our observation that the administration of considerable amounts of water to edematous patients suffering from hemorrhagic nephritis may result in an increase in the elimination of water greater than the extra amount given.

In hemorrhagic nephritis diuretics are distinctly contraindicated. This is especially true of the diu-

## CLAUSEN'S CHART

	Tubular or parenchymatous nephritis. (Nephrosis.)	Glomerular or hemorrhagic nephritis.
Etiology, infection	Staphylococcus, especially nasal sinuses.	Streptococcus, especially tonsils and mastoid.
Pathology, microscopic	General parenchymatous tissue injury. Degeneration of renal tubule cells. No deposits of fibrin.	General capillary injury. Glomerular lesions in kidney. Fibrin deposits.
Edema		Slight or absent
Urine	Volume much decreased Albumin Blood occasionally	Volume normal or moderate decrease. Albumin. Blood.
<b>BLOOD:</b>		
N.P.N.	Normal	Increased
Chlorides	Normal or low	Increased
Serum protein	Low	Normal
Lipemia	Present	Absent
Surface tension	Low	Normal or high
Pressure	Normal	Increased
P.S.P. test	Normal	Low
Uremia	Does not occur	May occur
Response to high protein diet	Good	Symptoms aggravated
Response to purin diuretics	May be good	Symptoms aggravated
Prognosis	Good, if infection can be removed. No permanent damage.	Good in most acute cases. Permanent damage in chronic cases.
Mode of death	Intercurrent infections	Uremia.

retics of the purin series. We have observed an increase in hematuria and of nitrogen retention in patients so treated.

The administration of alkalis has been recommended as a method of treatment. It is true that acidosis sometimes occurs during the course of glomerular nephritis, but it is also true that the administration of alkali is likely to lead to the development of alkalosis and often tetany with associated convulsions.

The acidosis of glomerular nephritis is in part explained by failure of the kidney to excrete acid and it is known that acid phosphate is retained in the blood. The kidney also has a diminished capacity for the excretion of alkali. There is no evidence that alkali benefits the kidney. Indeed, exacerbation of all the symptoms may result from alkali administration.

A more logical method of treatment is the administration of calcium lactate by mouth. This leads to an increased excretion of phosphate by the bowel and this lowers the phosphate content of the blood. Symptomatic improvement has been observed following this form of treatment.

It has been shown that sweating fails to lead to the elimination of any harmful substance. It is weakening to the patient and is, in general, contraindicated. The only possible good effect is the peripheral capillary dilatation.

The intravenous administration of hypertonic glucose solution leads to a movement of fluid and retained solids from the subcutaneous tissues into the blood and out by way of the kidneys. The glucose also has a protein sparing action. This is a valuable method of treatment.

In the early acute uremia, bleeding, followed by a transfusion, or injection of glucose solution, is of distinct value.

The two types of nephritis discussed have been considered as separate and distinct diseases. This conception is not based on the pathologic findings in the kidneys. Indeed, as we have seen, the changes occurring in the kidneys are to be considered merely as part of the general body injury, and not the essential cause of the symptoms observed.

In all cases of glomerular nephritis there is some tubular involvement. This may be due to the action of the same toxic agent, or to circulatory changes in the tubules occurring as the result of the glomerular involvement. Complete destruction of a glomerulus leads to atrophy of the corresponding tubule. On the other hand, extensive involvement of the tubules may well lead to some involvement of the associated glomeruli. In any event, the changes in the kidney *per se* are not the important differentiating factor. In the classification adopted of glomerular and tubular nephritis, it is to be understood that both conditions are general ones

with most marked changes in either the vascular or cellular systems. Indeed, it would be well if some other nomenclature could be adopted which would emphasize the general nature of the conditions. The types of nephritis we have considered are not essentially diseases of the kidney any more than syphilis and measles are diseases of the skin.

There may be a transition from one type of nephritis to the other, aside from the changes observed in the kidneys. A patient with parenchymatous nephritis is very susceptible to infection and secondary streptococcus infections are not infrequent. In such instances a combination of the two conditions may be present. It is impossible to state, in the light of our present knowledge, whether or not a purely parenchymatous nephritis may undergo a transition to a glomerular nephritis in the absence of the secondary infections.

A summary of the essential differences in the two forms of nephritis is given in a chart prepared by Clausen.

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**Abdominal Surgery in Diabetes.** D. F. Jones, L. S. McKittrick and H. F. Root, Boston (*Journal A. M. A.*, Sept. 12, 1925), are of the opinion that the only additional consideration in deliberate operations on diabetic patients other than would be considered in normal persons is the ability to control the diabetes before operation. In infections, acute and chronic, it is much more important to operate than in the case of normal persons, and in acute cases the operation is more of an emergency than in the normal. They must be treated as emergency cases because of the difficulty of determining the seriousness of the lesion, and because acute infections quickly lead to serious diabetic conditions. The rule should be to operate first, and at once, in acute infection and treat the diabetes after the operation.

## SURGERY OF THE GALLTRACTS

SOME OF THE MAJOR PROBLEMS

A CLINICAL DISCUSSION

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(Concluded)

Case 3. Aug. 2, 1924. *Preliminary Discussion.* This patient, female 52 years of age, is afflicted with slight pain and deep jaundice which has been increasing for about five or six weeks. For the past eight or nine years she has been troubled with right-sided pain, extending from the rib margin to the area of the appendix. Has attacks of dull aching over the area of gallbladder, burning sensations through the stomach, appetite is poor, no nausea or vomiting except with sick headaches. She has a great many headaches. Patient is run down and weak. The diagnosis which is written on the history chart is "obstructive jaundice, the cause of which cannot be determined."

She also has an extreme gastropnoxis. The stomach, which is enormously dilated, is atonic and contains a twelve-hour barium meal residue. The patient does not give the complete picture of gallstones in the common duct. She has had no chills and no fever. The most marked symptom we have seen in the entire examination is the extreme gastropnoxis with a marked residue in the stomach without any organic filling defect shown under the x-ray.

I have often thought that these cases of extreme ptosis might under certain conditions produce jaundice, although I do not remember that I have ever seen a case where I was sure that jaundice was produced in this way. While the pain is moderately severe, the attacks have not been the attacks of gallstone colic. There has been the clay stool that goes with total obstruction. This at times has lasted for several days. She has now been in the hospital for several days and the jaundice is rapidly increasing.

*Observations During Operation.* We make our incision down through the right rectus muscle. We find the gallbladder is smaller than normal, whitish in appearance but contains no gallstones. There is no marked dilation of the common duct. The pancreas is somewhat hardened but the pancreatitis is not particularly marked. I am unable to find any evidence of stones in the common duct. The one outstanding observable feature is a tremendously dilated duodenum. The duodenum is as large as a distended colon. I lift up the transverse colon and find that the duodenum below it is three inches in diameter. In looking over to the left, I locate the superior mesenteric artery. It is stretched taut like a string across the duodenum, producing what appears to be definite obstruction (fig. 13).

We now insert a tube into the stomach and I am able to force gas out of the duodenum into the stomach and out of the tube, thus collapsing this enormously distended duodenum. Back pressure from the duodenum is without doubt the cause of the twelve-hour residue. In the absence of gallstones or any mechanical obstruction in the duct, is it not possible that this chronic distension of the duodenum, which Wilkie has called "duodenal ileus," may be the cause of this jaundice also? I have never seen a case of this kind with jaundice. Of one thing I am certain, however. This is one of those rare cases of duodenal ileus, produced by the superior mesenteric artery. I am, therefore, going to make an anastomosis between the duodenum and the jejunum which I do in just the same way as I would do a gastroenterostomy (fig. 13). I think we will also open the common bile duct.

I push the fat off the somewhat distended and

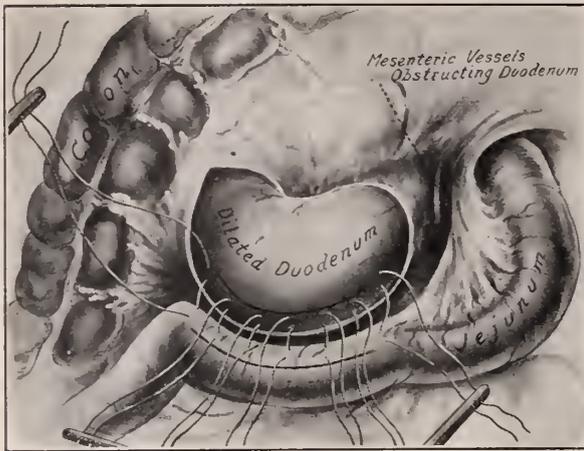


Fig. 13. Enormously dilated duodenum. Superior mesenteric artery seen definitely constricting the last part of the duodenum. Peritoneum has been slit, the jejunum swung around and is being attached to the duodenum as the first step of duodenojejunostomy. The remaining steps are similar to the ordinary gastroenterostomy operation.

thickened duct with the end of this forceps, then introduce two fraction loops and make a longitudinal incision in the wall of the duct between these loops. I pass a probe upward and feel no evidence of stones. I notice that there is a little bile in the common duct but it scarcely makes a stain on the gauze. I now turn the probe downward and see that it passes easily into the duodenum. There is not the slightest obstruction. The opening seems to be, if anything, a little larger than normal. While the probe is in the duct, I pass my thumb and index finger upward along the probe and carefully feel for possible stones. I find none. Can this be an infection that produces this jaundice? It is possible. This colorless bile is what Judd has referred to as white bile. We slip in a small rubber tube and pass it upward toward the liver and leave it to drain in the liver and ducts. Now put a protected quarantine around this tube and opening so as to keep the intestine away from the soiled area and also act as a drain.

*Postoperative discussion.* I think every surgeon who has treated many gallstone cases has observed what has been called white bile. I feel sure that this is usually due to a prolonged obstruction of some kind or to an infection. We know that it is often due to an obstruction in the common duct itself, found in certain cases of stricture of the common duct or of stone in the duct. Is it not probable that the cause of white bile is a destruction of the liver cell function, usually by pressure from below? I feel that the jaundice in this case may have been due to the enormously distended duodenum.

*Postoperative Report.* The next morning after the operation the bile drainage from the common duct for twenty-four hours showed about four ounces. It was but slightly yellowish. In other words, there was very little evidence of bile coloring matter in it. This continued in about the same amount for six to eight days. The jaundice during this time had not materially diminished. After the

wicks (which were used in the construction of the quarantine) were removed, the bile was still white, very little coloring matter. The jaundice was still as complete as it was at the time of the operation. Finally, after about two weeks the coloring of the bile became deeper. The saturated dressings became a deep yellow. The jaundice at the same time began to diminish rapidly and the patient began to improve in health. At the end of four weeks the jaundice had almost disappeared and the patient began to improve more rapidly.

Since the operation a year ago, the patient has been entirely free from the jaundice. She has also been largely relieved of her right-sided pain and dull aching over the upper right side of her abdomen which she had had for nine years. Her headaches have been greatly relieved and she is decidedly better. She has gained approximately twenty pounds in weight. Of course, the question in this case which might appropriately be raised is: Did the drainage of the bile duct or did the duodenojejunostomy produce the result?

This query is particularly apropos when, in looking over our cases during the past year, I have noted three other cases of very severe chronic jaundice with a certain amount of tenderness over the gallbladder but without severe pain, in which at operation, while the duct was somewhat dilated and thickened, there was no obstruction by stricture or stone. Yet the jaundice has been relieved after drainage of the common duct and gallbladder. In all of these cases there was severe itching, white bile and acholic stools, all of which became normal after a few days of drainage. All these patients were past forty years of age and the jaundice had been gradually deepening for periods varying from four to ten weeks.

A question arises as to whether drainage of these ducts cured the patients. I think it did. I have known of two other cases similar in most respects, in which operation was postponed until too late, in which the patients died. I am convinced that there are cases of painless jaundice, in which there is no definite obstruction and which may go on to a fatal termination, if no drainage is made but which can be relieved by drainage of the common ducts. This form of jaundice which occurs in the gallstone age must not be confounded with the catarrhal jaundice of the young, in which no treatment is required. I am at a loss to know just what happens in these cases and why drainage of the ducts gives relief.

Case 4. Sept. 13, 1924. *Preliminary Discussion.* As part of the history of this case, I would like to quote from the stenographic record of a previous operation performed on the same patient:

Clinic of Feb. 17, 1923: "This patient is a housewife, forty-seven years of age, married and has three children. She began to have trouble about four years ago with pain in the pit of the stomach, radiating to the right rib arch. I believe she has not had an attack of jaundice and only recently did she begin to vomit. During the last few weeks she has been vomiting from time to time with the attacks and I believe it required morphine on one or two occasions to relieve her pain. At the present time she is very tender under the right rib arch. Within two days she has had severe gripping pain, coming on in the pit of her stomach, radiating up under the right rib arch and extending up into the chest. This would indicate gallstones but it is not positive proof. She has had a slight fever which would make one think of septic gallbladder or stones in the common duct. There are some x-ray shadows in the neighborhood of the gallbladder which Mr. Trahar believes to be gallstones.

"We make our incision in the right rectus muscle, turning toward the median line just below the rib arch. There is the stomach and duodenum which we carefully examine. The stomach is not enlarged. We pick up the pylorus which is determined by a vein running directly around it. We find that it is normal. We examine the duodenum and find that it is normal. Before doing anything with the gallbladder, I will see if there is any trouble below. I examine the pelvis and find a large number of subperitoneal fibroids which are very small. The appendix contains no concretions and is uniform in size. Therefore, we will call it normal. Examine the right kidney and find it is normal in size. Examine its pelvis and find there is nothing palpable in it. I feel in a general way over the abdominal organs, then up the descending colon, coming up to the left rib arch and there I discover the spleen and find it apparently normal. I examine the pancreas which I feel running just above and back of the stomach as a rather hard mass, lobulated very much the same as the sweetbreads of animals. It is not unduly large or hard. Now we come back to the original point and bring up the gallbladder. Note that it is acutely inflamed, edematous and greatly thickened.

"We will extend our incision upward and make the inward curve longer. In order to protect the patient from infection which we know we have in here, we will temporarily pack the fossa on the right side below the gallbladder with quantities of gauze, sufficient to take up any fluid we may spill. Another thing which Mayo Robson early taught us, and which was one of the early advances in gallstone surgery, was to pull down and rotate upward and forward the liver and the gallbladder. This brings the cystic duct forward. I discover a stone as large as the end of my thumb, impacted at the beginning of the cystic duct. Going a little further over into the mesentery, I discover another large lump which is three-fourths inch long and one-fourth inch in diameter. It is not entirely hard. This is not a stone but is a large gland which has become infected through the inflammatory action going on in this area. We now put in our retractors. There is a little pouch of the gallbladder somewhat apart from the rest of the main pouch. This is not uncommon. There is a narrowing at this point in the gallbladder, making a relative stricture. We often cut into such a pouch as this lower one and call it the cystic duct but it is not.

"Now, the question which we must decide is whether we are going to open this gallbladder now or remove it intact. We will make an easier operation by opening it and getting this mass out of the

way. In the meantime I have accidentally opened it here with the point of my forceps. This will do no harm for we will replace this temporary pack of gauze by a quarantine drain. This gallbladder is filled with clear mucus. If we leave a gallbladder like this and drain it, it is probable that there are fifty per cent of chances that the patient will not be cured and will come back later with a mucous fistula. For we do not know whether that stone has made sufficient pressure in the duct to destroy the vitality of its mucous membrane. In this case a stricture would result.

"This gallbladder tears easily on account of the acute inflammation. It is very important that we remove it entirely for, if we leave even a small piece of live mucous membrane, we may lay the foundation for a permanent fistula. We must isolate and identify the duct absolutely because of its close relation to the common hepatic duct which we might inadvertently injure. I have located the cystic duct. The gallbladder is very edematous, so I will cut the peritoneum around the edge.

"I insinuate my finger between the gallbladder and the liver and enucleate it from the fundus inward. I reach down underneath the gallbladder and put the forceps on the cystic artery. It pulls off very easily and the artery is spurting away. I take another bite with the forceps. This is a dangerous place for the use of forceps. The danger is that we may get the common hepatic duct. I now peel off the gallbladder, isolate the duct and ligate the vessel. On closer examination I detect some gallstones in the common duct, a couple of small ones. I will pick up that cystic duct and split it lengthwise. In doing so, I find that one of the stones is in the cystic duct. I have split it down and opened the common duct. In the common duct I find a flocculent-looking material, resembling pus.

"There you see is a stone I have just taken out of the common duct. This patient had no jaundice. We know it is the common duct because I have the cystic duct in the forceps. Now we pass the probe up into the hepatic duct. Will see if we can pass it down the other way. There is the duodenum coming into view, and there is the probe passing into the duodenum.

"The next thing to do is to put a little tube down into the common duct. I do this because I found some flakey, purulent substance passing out with the gallstone. Patient possibly has a mild cholangitis. I have the tube in the common hepatic duct. I tack the tube into the wound with fine catgut. We now place a protected quarantine pack around it."

The patient again comes to operation with the following history since the first operation. From time to time she has had slight fever, distress in the neighborhood of the gallbladder a great deal of the time and at times has been slightly yellowish, although I think she has not shown real jaundice. She has been in the hospital much of the time recently. All the time we knew very well that all the stones had been removed. We also know that we had an infection in the bile duct which probably was not completely removed. She was finally turned over to my associate, Dr. Sears, who treated her medically. He now advises a second operation with the belief that there must be something either in the way of infection or stone in the common duct. She has not had the chills and fever and jaundice

that common duct stones usually show, but she is not well and we are going to open the abdomen again.

*Observations During Operation:* We are amazed at the small extent of adhesions existing, yet that is what we practically always find after a quarantine has been properly placed around a field of operation. There is a slight lump down near the common duct which I discover with my finger. This lump is attached to the liver. On dissecting it away, it seems it might be a stone. It is not. Apparently it is the attached stump of the cystic duct but does not contain a stone. We note the enormous common duct. It is at least three-fourths inch in diameter and is thickened, but by careful examination I can detect no stone. I take a large hypodermic needle and insert it into the duct and withdraw pure yellow bile. No evidence of infection or trouble of any kind showing so far. I pass two traction loops through the wall of the duct and between the loops make a longitudinal incision into the duct sufficiently large to admit my index finger easily. In passing the finger upward I detect the bifurcation of the hepatic duct. No evidence of a stone or trouble of any kind. It is possible that there is a stone down in the ampulla of Vater. The duct is large enough so that I easily pass my finger downward. No stone is encountered. My finger is just ready to enter the duodenum, and to my amazement I find that the index finger passes easily into the duodenum. The mucous membrane forms a rather tight stricture about my index finger which passes well into the duodenum. The head of the pancreas is not materially hardened.

Now here we are with an enormously dilated common duct, no evidence of infection, no evidence of stones, no organic obstruction and yet the patient is having serious trouble. We have a duct almost as large as a duodenum, with an opening that is half as large as the duodenum itself. I am afraid to put drainage into this duct, lest the duodenal contents may back into it, producing an indirect duodenal fistula. I can see no good purpose that drainage can accomplish in this case. I therefore close the duct by sutures and place a very small drain down in the neighborhood. Nothing has been accomplished by the operation except the discovery of this enormously distended duct which in reality is a diverticulum of the duodenum.

*Postoperative progress.* The patient during the following year has from time to time had upsets as before but these, for some unknown reason, have gradually diminished and patient is now in better health than she has been for years. During the progress of this case, it must be observed that the patient is passing through the menopause. This may have had something to do with the morbid symptomatology she has shown. Now she is practically through the menopause and is feeling quite comfortable again. Yet, I cannot but feel that this dilated duct has had something to do with her morbidity.

Case 5. Nov. 2, 1924. *Preoperative Discussion.*

This patient, a man sixty-three years of age, was registered on Oct. 2, 1924, with the following history: In 1905 he was operated upon for gallstones by a very good surgeon, after having had frequent attacks of gallstone colic, with a pain also occurring under the left rib arch. A small gallbladder containing stones was removed at the time and a small rub-

ber tube drain was used. The patient was not entirely relieved of the left-sided pain.

For three years just past he has periodically had sharp, increasingly severe attacks of pain in the left upper abdomen, exactly similar to the pain which he had before the gallbladder was removed nineteen years ago. Recently he has had more frequent attacks, and for the past three weeks has been almost constantly ill. He has had a feeling that the pain has something to do with meals but his physician, an internist of note, finds there is bile in the urine after each of these attacks of pain. The internist is of the opinion that there is probably an obstruction in the common duct, possibly gallstones in the duct.

In our examination we have found there is definite gastric hyperacidity. Patient has been under observation for a month, during which time he has had other attacks of pain in the left side of the upper abdomen. Bile has each time been discovered in the urine, along with a gradually increasing jaundice in the skin and sclera of the eyes. Having had the experience of a case with a similar history recently, we come to operation with the preoperative diagnosis, "dilated common duct with possible pancreatitis and hyperchlorhydria."

*Observations During Operation:* The stomach is firmly adherent to the under surface of the liver in the bed, from which the gallbladder had been removed at previous operation and could not be separated without dissection. This condition, following the use of a small rubber tube for drainage, formed a marked contrast to the other case reported, where a quarantine pack had been used at the first operation. Dissection is made with difficulty. After mobilizing the duodenum and stomach from the bed of adhesions, the common duct is found. It is three-fourths inch in diameter, its wall practically as thick as shoe leather, yellowish white in color, few blood vessels running across it. A hypodermic needle introduced into the duct shows pure yellow bile, no stones.

Two traction loops are placed in the wall of the duct toward the liver end, long incision is made in the middle of the duct between the two loops, gloved index finger passes easily upward to the bifurcation of hepatic ducts. No stone found. There is ample room for easy passage of the finger. The index finger is now turned down and passes easily into the duodenum past the last joint. The last joint of the index finger passes through the channel in the head of the pancreas rather tightly and through the ring of mucous membrane. A ring of mucous membrane at the outlet makes mild constriction on the finger. A large prostatic sound No. 26 passes easily into the duodenum. Two inches beyond the pancreas the point of sound is made to show pressure through the wall of duodenum. Bile in the duodenum is yellow and pure, showing no evidence of inflammation or pus of any kind.

Liver is adherent to abdominal wall but normal in every way. Head of pancreas is hard but not materially enlarged. Owing to the fact that the patient has definite jaundice, I take a chance on the duodenal contents regurgitating back into the common duct with the hope of temporarily relieving the intraintestinal pressure on the smaller liver ducts. A tube the size of a lead pencil is passed into upper end of duct toward liver. The duct is sutured around the tube. A fold of omentum is drawn across the pylorus and duodenum and sutured to prevent reunion of stomach and raw surfaces. A protected quarantine is placed.

*Postoperative report.* The patient made a gradual but slow recovery and is now in very good health. Has occasionally had attacks of left-sided pain but not severe. Has not had jaundice since

recovery. I do not know just what was accomplished by the operation. There was at least temporary drainage of the galltracts which may have had an influence and may have caused a reduction in the size of the duct, although I am not positive of this. It is probable that cutting loose the stomach from the under surface of the liver had an important bearing on the case.

Cases 4 and 5 call for a discussion of the cause of the dilatation of the common duct in the absence of a functioning gallbladder. Judd of Rochester and also Archibald of Montreal have claimed that contraction of the sphincter of Oddi is the essential factor. In October, 1920, in Montreal I saw Archibald show moving pictures, demonstrating the power of the sphincter of Oddi, in which he introduced fluid under moderate pressure into the gallbladder and permitted it to be forced into the duodenum. The duodenum of the dog was open and every few seconds a spurt of water would shoot out into space through the opening. It was claimed that the sphincter of Oddi was holding the fluid up to a certain point and then would suddenly give way.

I spoke to him about it after the lecture and asked him how he could rule out the rhythmic contraction of the gallbladder itself as the cause of this intermittent spouting. He admitted he could not. Judd has made some very interesting experiments in dogs which seem to indicate that, if the sphincter of Oddi is cut after removal of the gallbladder, dilatation does not take place. Admitting that this is true and that the sphincter of Oddi is one of the important influences, it has always been my opinion that it is not the most important influence. In our animal experiments we have found that a duct, whether it was the bile duct or the ureter, when transplanted into the intestine directly always dilates.

On the other hand, we have found that in all cases in which the duct is made to run under the mucous membrane for some distance before emerging into the lumen of the intestine, no dilatation takes place. So in these experiments we have proven conclusively that the sphincter of Oddi is not at all necessary to produce the dilatation of the duct. For in these two experiments the duct is not present and yet in the one instance the duct dilates while in the other it does not.

We can reach no conclusion but that the dilatation of the duct is due to the intrainstestinal pressure which is greater than the pressure within the

bile duct or in the ureter. This has been proven clinically in a large series of cases by Dr. C. H. Mayo in implanting the ureter into the bowel. Why does the common bile duct dilate in the absence of a functioning gallbladder? I think it is generally conceded that the gallbladder serves the purpose of a reservoir for the storing and concentration of bile during certain stages in digestion or intervals of digestion. When it is removed or made functionless, there is no reservoir and the bile continues to secrete.

I think it was Kehr who first called attention to the fact, which was later verified in the practice of all surgeons, that a biliary fistula continues to drain in the night for sometime after it has ceased to drain in the daytime. Kehr discovered that, if he would feed the patient at frequent intervals during the night, the bile would not discharge any more at night than in the daytime. In other words, when digestion was active the bile went into the intestine. When no digestion was going on, it poured out through the fistula. Now, we know that the bile duct runs under the mucous membrane just before it enters into the duodenum, and that you may inject fluid into the duodenum under considerable pressure without forcing it back into the common duct. In other words, the duct is normally protected from duodenal pressure and duodenal contents by a perfect valve.

Our experiments prove that, in the absence of this valve action, the duct dilates. The question is: Why does it dilate with the valve present when the gallbladder is removed or made functionless? Kehr's observations furnish the key to the riddle. During the digestive action of the duodenum a relative diminution of pressure follows in the wake of each peristaltic wave. This releases the pressure on the valve and permits the duct to empty. During intervals of digestion the normal intrainstestinal pressure is brought to bear on the valve and keeps it tightly closed. The gallbladder being removed, there is no place for the bile to go. Therefore, the duct dilates and by chronic dilatation compensatory thickening takes place and the duct becomes stronger to meet the emergency.

Now here we have two cases in which the gallbladder has been removed. The duct is enormously dilated. The sphincter of Oddi is functionless so that my finger passes easily into the duodenum. In these cases, therefore, the dilatation is not due to the sphincter of Oddi but is due rather to the intrainstestinal pressure applied from within the duct.

An interesting thing in connection with dilatation of the duct is that it is not limited to complete absence of the gallbladder by removal. We find a dilated duct with a somewhat thick, contracted gallbladder. We find it in connection with a septic gallbladder, in which the elasticity of the wall is gone or in which a stone is impacted in the cystic duct, a hydrops of the gallbladder. We find a dilated duct, with a gallbladder filled with stones. In other words, we find a dilated common duct in the absence of a normally functioning elastic gallbladder or reservoir.

This is illustrated by case No. 6, female, age 42. This patient had typhoid fever at eight years of age; had the first gallstone attack, which was typical, four years ago; was sore for a few days afterward. Her second attack came two years later; her third attack was four weeks ago; fourth, three weeks ago and fifth was one week ago. Her husband, who is a physician, brought with him pictures showing gallstones distributed over a considerable area, apparently not only in the gallbladder but in the ducts. They are very clearly illustrated in figs. 14 and 15 herewith reproduced.

*Observations During Operation:* Upon opening the abdomen, find gallbladder is long, thick, whitish in appearance, about an inch in diameter and contains many stones. Upon pulling down the liver, there is a narrowing in the gallbladder, practically a stricture. Beyond this stricture there is another pouch. At the lower end of the pouch there is a stone which is immovable. In stripping off the peritoneum with the end of a forceps, an enormous common duct comes into view. It is thick, fully three-fourths inch in diameter, uniformly dilated from the under surface of the liver to where it disappears underneath the duodenum.

Two sutures are placed for traction loops. The common duct is incised. Its wall is thick, bile is quite clear. Two faceted stones, size of hazelnuts, float out with the bile. A gloved finger passes easily to the bifurcation of the hepatic ducts. It also passes for some distance downward, where other stones are felt. A flexible gallstone probe passes downward by these stones well into the duodenum. Following the course of the probe with the fingers on the outside of the duct, a nodular mass somewhat soft is felt in the ductal groove of the head of the pancreas. One by one, four more stones are brought up beside the probe in the duct, until finally, after being dislodged from the head of the pancreas, they are all brought out through the incision in the common duct.

Another stone is detected which seems to be neither in the gallbladder nor in the duct. An incision exposes the stone and it is removed from what appears to be a pocket in the wall of the cystic duct. The cystic duct is small, almost, if not entirely, obliterated. This is discovered after the gallbladder has been removed. It would seem impossible that these faceted stones, although similar in formation to those found in the gallbladder, should have formed in the gallbladder and passed.

It is very difficult to figure out why a chain of large stones in the common bile duct fails to produce jaundice. This patient has never had jaundice. My belief is that she has possibly had stones in the gallbladder for a long time, at least four years, possibly much longer. The gallbladder became



Fig. 14. Gallstones in gallbladder and in the common ducts shown by x-ray. (1). Stones in gallbladder. (2). Stone impacted in wall of cystic duct. (3). Group of four stones in a large dilated common duct, being massed together in the pancreatic groove but which permitted the easy passage of a probe through the common duct into the duodenum. Two other stones were found above the cystic duct.



Fig. 15. Stones shown in the ducts and in the gallbladder, showing their relation to the stomach and duodenum (same case as fig. 14).

functionless either by obstruction of the cystic duct or by inflammation. As a result the common duct dilated, after which the original infection caused the formation of stones in the common duct.

I think that, whenever a common bile duct has dilated in the absence of a functioning gallbladder, it then becomes a potential laboratory for the forma-

tion of gallstones, and this is one of the principal objections to removal of the gallbladder, except when it is actually diseased. Of course, when it is diseased to such an extent that elasticity has been destroyed by infection or contraction or when it is packed full of stones or when the cystic duct is obstructed, the effect is the same as if it had been removed and, therefore, in such a case it should always be removed at operation but, as was stated in the beginning of the article, I am very much of the opinion that far too many gallbladders are now being removed.

Graham's dye test, which is very remarkable and almost an epoch-making contribution in the diagnosis of gallbladder disease, will of course become of great value and yet I cannot but feel that it will probably be some time before this procedure does more good than harm.

Recently an eastern surgeon of some prominence was attending my clinic, while some work was being done on the gallbladder. He was asked his opinion of Graham's dye test. He said he had become very enthusiastic and during the past three months had proven its accuracy by operation in thirty-six cases without failure. He was asked in how many cases he had found gallstones. He said in eight out of the thirty-six. I could not refrain from suggesting that he might be removing too many stones.

I must confess that this Graham test is very fascinating. We are using it with some satisfaction and some disappointments. In two days last week we had four gallbladder cases on whom the Graham test had been used. In the first case the dye failed to show a shadow of the gallbladder which is said to mean disease. There were some symptoms of gallbladder disease and a clinical diagnosis of "possible gallstones" had been made.

Upon opening the abdomen the gallbladder was thin and blue. The appendix showed a certain amount of disease and had been covered in by adhesions. It was removed. Because of the findings with the Graham test, a piece of gallbladder was cut away and a frozen section showed a chronic inflammation of the submucous layers of the gallbladder. A theoretical success not clinically proven. Even in the presence of this, it did not seem wise to remove the gallbladder. I think drainage was all that was required.

The second case on this day was one of frank gallstones which did not show with the x-ray and which failed to show the dye in the gallbladder with the Graham test. A complete success.



Fig. 16. Outline of the gallbladder in a picture made 15 hours after administration of the tetraiodophenolphthalein.

In the third case, the shadow of the dye was shown in the gallbladder in two pictures, but it failed to show a reduction in the size of the gallbladder after the test meal. At operation this gallbladder was found thick, very yellowish in color and was partially covered in with adhesions of omentum to its fundus, while the gallbladder itself was adherent to the duodenum in most of its course. This gallbladder was removed as being chronically diseased. The pathologic report was as follows: "chronic cholecystitis and cholelithiasis with acute exacerbations."

In the fourth case the patient was a doctor who had had four gallstone attacks. The dye gave a perfect gallbladder outline in two different pictures. At operation an acutely inflamed gallbladder was found. The peritoneal surface was red and swollen and six small gallstones were found in the gallbladder.

Mr. Trahar, our roentgenologist, has furnished me with some very interesting pictures, showing some possibilities of the Graham technic. Figs. 14 and 15 show some pictures in a case, in which a splendid roentgenologist had made a diagnosis of "probable gallbladder disease" by the ordinary technic, although he was unable to find stones. Fig. 16 shows complete outline of the gallbladder by the Graham technic. Fig. 17 shows the same gallbladder after a meal has been given, showing a gall-

## SYMPATHECTOMY IN THE TREATMENT OF SPASTIC PARALYSIS\*

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Due to the work of Royle and Hunter of Australia, there has been, during the past year, a marked revival of interest in the treatment of spastic paralysis. This is termed a revival because of the fact that a review of the literature shows recurring periods of activity in the treatment of this condition, following the publication of each newly developed idea as to cause or treatment. The work of Forster and Stoffel dealt with the peripheral nerves. Sharpe worked upon the type of case due to meningeal hemorrhage, and many others have contributed to our knowledge of muscle reeducation and relief of contractures.

The Australian contribution relates to the function of the sympathetic nervous system, and the effect of sympathectomy upon one of the components of spasticity which is present in certain types of this condition. Royle, an eminent orthopedic surgeon of Sidney, has for several years been carrying on experimental work upon the mechanism of spastic paralysis. In common with most other investigators he worked, first, upon the principle of reciprocal innervation, that is, the principle that each stimulus to a muscle group carries with it a reflex impulse which relaxes the antagonistic muscle group. It was also generally considered that the stiffness or increased tone of spastic muscles was maintained by impulses arising in the spastic limb itself, known as proprioceptive impulses.

Royle's experiments demonstrated that reciprocal innervation was not effective in spastic paralysis and led him to study the possible relation of the sympathetic nervous system to the phenomena exhibited by spastic muscles. During this study the late Professor John I. Hunter, who was closely associated with him in these investigations, happened to mention some microscopic slides which showed the endings upon striated muscle of both medullated and nonmedullated nerve fibres. This suggested to them investigations which have resulted in correlating two lines of research that hitherto have been pursued independently by many anatomists and physiologists in various laboratories throughout the world. This correlation is a most significant contribution, and is of such moment that a brief state-



Fig. 17. Shows reduction of the gallbladder in fig. 16 one hour after taking a meal composed of an abundance of fats.



Fig. 18. Outline of a normal gallbladder 15 hours after taking the tetraiodophenolphthalein (16½ hour plate taken of this case showed no shadow of gallbladder after taking the test meal).

bladder with complete elasticity and, further, showing how the meal has caused the emptying of the gallbladder and consequent shrinking. Fig. 18 shows typical picture of a normal gallbladder by the use of the Graham technic. While the Graham test is very important, I am sure we are not yet able to say how important it is, nor are we able from any of the available literature to properly interpret its meaning and, while this uncertainty prevails, there will possibly be thousands of gallbladders removed which should not be removed. Clinical judgment must evaluate the x-ray findings.

\* Read before the North Pacific Pediatric Society, Portland, Ore., June 29, and the Forty-seventh Annual Meeting of Medical Association of Montana, Lewistown, Mont., July 8-9, 1925.

ment of it is warranted even in a clinical meeting such as this.

The first of these two independent lines of research dealt with the type of nerve endings in striated muscle. For many years the existence of two types of motor endings has been recognized and the function and structure of these have been debated from all angles, until at present most of the investigators are in accord and their decision may be quoted as follows: "Voluntary muscle has a double nerve supply, composed of medullated fibres from the anterior horn of the cord and of nonmedullated fibres from the sympathetic ganglia."

The second line of research dealt with the physiologic activity of muscle, and this also has been under investigation for many years. The concept of a muscle familiar to most of us pictures an elastic contractile body, having an origin and insertion which may be approximated in response to stimuli and thus produce motion. Relaxation of antagonistic groups permits this motion, and since the fibres do not possess the power of active elongation, elongation of a muscle is dependent upon the contraction of its antagonists. Also the property of muscle which maintains it in a state of very slight tension ready to respond to a stimulus is familiar to us under the term of muscle tone or tonus.

Physiologists, however, through their researches have shown muscle activities to be far from the above simple conception. They analyze tone into two components, contractile and plastic; the former being the property by virtue of which muscle fibres assume a diminished length, and the latter the property by which an altered length is maintained. Also, they have shown that the maintenance of the altered length is entirely independent of the property of contractile tone and of voluntary effort. Thus, various postures of the body are assumed and varied reflexly or voluntarily by virtue of contractile tone and these postures are maintained without the expenditure of voluntary effort by virtue of plastic tone.

Further, studies have been carried out to determine the parts played by cortical and spinal control, and by these researches other properties have been discovered. When cerebral control is abolished, a peripheral stimulus causes marked reflex contraction, particularly of the antigravity muscles, or else those muscles concerned in the reflex position of rest of the animal under consideration, which contraction is maintained for a comparatively long period

without apparent fatigue. This reflex posture can be changed by external force so as to lengthen or shorten the muscles concerned, and the newly imposed position is also maintained in a like manner.

The term "lengthening and shortening reaction" has been applied to this phenomenon, and it is dependent upon a marked increase of plastic tone caused by the interruption of cortical control. This reaction makes plain the origin of the term "plastic tone" because it is by virtue of this characteristic that the muscle remains for some time in any position assumed and hence resembles a plastic substance.

Further investigations developed the fact that, in a subject showing the lengthening and shortening reaction, section of the posterior nerve roots abolished this reaction, and that, while contralateral stimuli still produced the increased reflex contraction caused by lack of cortical control, the increase of plastic tone which had served to maintain the position of contraction was lost. This clearly indicated that plastic tone was dependent upon an intact reflex arc, but the exact pathway was still undetermined.

To summarize, then, one line of research had proven the existence of a somatic and a sympathetic innervation of striated muscle, and the other had demonstrated the two components of muscle tone, contractile and plastic, the former concerned with the production and the latter with the maintenance of posture, and had shown that in the presence of a condition simulating spastic paralysis one component could be affected independently of the other. At this juncture, the experimental work of Royle and Hunter took the center of the stage. They saw the possibility of a relation between the two types of innervation and the two types of tone and began extensive experiments upon the relation of the sympathetic nervous system to muscle activity.

A considerable amount of work along this line had previously been done by various observers, but the results had been inconstant and inconclusive; one investigator even stating after reviewing all obtainable evidence, that the only reason for supposing that the sympathetic fibres may have any function at all is the fact that they exist.

Most of this work has been done upon cats and Royle repeated it, using the rabbit, but with the same variable findings. He then determined to use a larger animal, because the sympathetic trunk and its branches would be more definite and the dis-

turbance due to surgery proportionately less. For his subsequent work he used goats, while Hunter carried on additional researches upon fowls. The result of this series of experiments was the demonstration of a constant and consistent influence of the sympathetic nervous system upon the activity of striated muscle.

Without repeating the details of the work it may be summarized as follows: It was shown, first, that simple sympathectomy had no effect upon muscle control, but did destroy the ability to maintain posture without fatigue and caused some depression of reflex activity; second, that the spasticity resulting from section of the cord was definitely altered by sympathectomy, there being inability to maintain posture, no noticeable effect upon reflex response to stimuli, and of course no cortical control or inhibition; third, that the spasticity resulting from decerebration which is characterized by increased plastic tone and the presence of the lengthening and shortening reaction was most markedly affected by sympathectomy, there being almost complete absence of the lengthening and shortening reaction, and the limbs offering little resistance to passive change of motion, thus indicating the removal of the increased plastic tone, there being also a diminution in reflex activity and in the continued maintenance of posture, but no appreciable effect upon the rigidity produced temporarily in response to stimuli.

These experiments were performed, recorded and interpreted in a most accurate and comprehensive manner, and form an undeniably sound basis for clinical investigation. In this connection it may be mentioned that a group of reliable men in Chicago, including Kanavel, Pollock and Davis, repeated part of this experimental work under most carefully controlled conditions, using cats for their observations, and they obtained the same inconstant and inconclusive results as Royle in his work upon small animals. They have as yet made no report of work upon larger animals but their reports of clinical cases indicate results somewhat similar to those of Royle, but in general less striking.

How, now, may these experimental findings be applied to clinical conditions, bearing in mind always the difference between the experimental animals and man, and the fact that it has not been possible to reproduce exactly in these animals the complete picture of those diseases which in man are characterized by spasticity.

Spasticity occurs as a symptom in both intra-

cranial and cord lesions, which conditions may be due to either congenital or acquired causes. In the case of congenital intracranial lesions the familiar conditions are atresia of some portion of the brain, or congenital vascular lesions; while as examples of acquired conditions may be mentioned intracranial hemorrhage at birth, traumatic lesions, and the development of vascular abnormalities, such as marked varicosities or hemorrhages from atheromatous arteries. Typical of cord conditions are the sclerosis and lesions due to trauma.

Little's disease, as originally described by Little, is due to intracranial hemorrhage from birth trauma but the name is often loosely applied to any condition characterized by a spasticity due to any intracranial condition, occurring in the prenatal, natal or early postnatal period. The characteristic feature of all these conditions is spasticity, due to the release of the spinal centers from the normal cortical inhibitory control. This release of control allows the excitability of the cord to increase gradually until the reflex spinal mechanism dominates all activities of the involved muscles. This means that both the somatic and the sympathetic reflex arcs are affected and, as the experiments have shown, the former subserves contractile and the latter plastic tone. The lack of control of the somatic arc permits an increased contractile response to sensory stimuli, and the lack of control of the sympathetic arc permits an increase of plastic tone, so that the posture produced by the contractile response is unduly maintained.

The most familiar example of this is the increased knee jerk with the delayed drop of the leg, the jerk being due to increased contractile tone and the delayed drop to increased plastic tone. If successive stimuli are given, the step-up reaction is exhibited, due to the fact that the increased plastic tone prevents the relaxation of the quadriceps muscle before a new contractile response is superimposed upon the previous one. In cases where the duration of the cortical lesion has been sufficient, the contractile response may not be confined to the extensor groups but, as in the chronic decerebrate preparation, may involve the flexor groups as well, and we have a rigidity in which the visible response to stimuli is determined by the relative strength of the antagonistic groups. Under these conditions a knee jerk may be apparently normal or even diminished in amplitude, and the presence of increased plastic tone can be demonstrated only by the use of passive motion to elicit the lengthening and short-

ening reaction. To do this the knee is flexed or extended passively. At first there is a distinct resistance due to the increase of plastic tone. As this is overcome the leg is moved fairly easily to a new position which the increased plastic tone again tends to maintain.

Depending apparently upon the extent of the cortical lesion, the amount of cortical control varies and we find all gradations of spasticity from that which is manifested by a slight clumsiness of certain muscle groups to that which causes a tonic contraction of nearly all the muscles of the body in response to a slight sensory stimulus.

Bearing in mind the experimental proof that the sympathetic system subserves plastic tone and plastic tone only, we may now determine the type of case in which we may hope for improvement following sympathectomy. The first requirement of all, and it is an absolutely essential one, is that there shall be sufficient mentality and sufficient maturity to guarantee sustained and intelligent cooperation in the muscle training and the muscle reeducation which must follow the operation. Without sufficient mentality such cooperation is obviously impossible, and a young child even with normal mentality easily becomes discouraged or tired. An arbitrary age limit of six years has been suggested by Adson and it seems reasonable to assume that below this age the average child will not have the necessary patience and persistence to obtain satisfactory results.

The second requirement is that there shall be an unobstructed pathway between the peripheral nerves and the cortical area which initiates voluntary motor impulses. A subcortical lesion, a cerebellar lesion or a cord lesion may obstruct, or even completely block this pathway. If it is impossible for voluntary impulses to pass such a block, the condition so far as the muscular system is concerned is the same as when the mentality required to produce such motor impulses is lacking. In the presence of cerebellar lesions causing incoordination, sympathectomy is contraindicated. Motor impulses from the cortex which have to do with posture and purposive movements are coordinated in the cerebellum and, if this coordinating mechanism is not functioning or is functioning erratically, the mere removal of increased plastic tone from muscle fibres can have no fundamentally good effect. It is even conceivable that such a procedure might aggravate the incoordination by removing a certain amount of restraint. Cord lesions which interfere with cortical

impulses likewise are an obvious contraindication, except in those cases where muscle reeducation is possible through the development of collateral nerve paths and where the process in the cord has been stationary for some time. Conditions such as spasmodic torticollis, tics, etc., which are characterized by intermittent contractions or periods of rigidity, are due to disorders of the medullated nerves or to conditions which are transmitted to the muscles by way of medullated nerves and hence cannot be benefited by sympathectomy. They are conditions which are dependent upon contractile, not plastic tone.

The third requirement is that there shall be no deformity or other physical impediment to voluntary motion. In cases of long duration contractures occur, due to shortened muscles, tendons and ligaments and these must be corrected before sympathectomy. Also in those patients who have never experienced normal muscle control a careful and prolonged course of muscle training and reeducation should precede the operation. In many instances a period of stretching by means of plaster or braces reduces spasticity to such an extent that with careful muscle training sympathectomy becomes, for the time at least, unnecessary.

The fourth and last requirement is that increased plastic tone shall be definitely demonstrable. The test for this consists in the demonstration of the lengthening and shortening reaction by means of passive motion, and by the step-up type of tendon reflex as already described.

The present status of the work on sympathectomy would apparently warrant the statement that it is contraindicated in cases which do not comply with these four requirements and that if it is done on such cases, the results will be disappointing and unsatisfactory.

The operation on the lumbar sympathetic trunk as described by Royle is as follows: An incision from the lower rib to the iliac crest is made at the location of the triangle of Petit and carried forward along the crest about three inches. The plane of cleavage in front of the quadratus lumborum is followed and the peritoneum carrying with it the ureter is retracted forward, exposing the psoas and beyond it the bodies of the vertebrae. On the right side the vena cava is raised and the sympathetic trunk is seen directly beneath it. The rami communicantes passing to the second, third and fourth lumbar nerves are cut, as are also all lateral, posterior and inferior connections below the fourth

nerve. All medially directed fibres are preserved, unless an effect upon the viscera is desired. On the left the procedure is the same except that the trunk is more easily approached. Adson has varied this operation by using a median abdominal incision and by severing the trunk above the ganglion which sends rami to the second lumbar nerve and removing it down to a point below the origin of the rami to the fourth lumbar nerve.

The operation developed by Royle for the cervical region follows the usual approach to the brachial plexus by an incision posterior to the sternomastoid. The omohyoid is retracted downward and it may be necessary to ligate the transversalis colli artery. The roots of the brachial plexus are identified as they emerge from behind the scalenus anticus; this relationship, however, varies. The sympathetic trunk does not appear except at the lower angle of the field, and the rami usually cross or penetrate the scalenus anticus, joining the medullated nerves close to the intervertebral foramina. They are difficult to define, especially in the region of the eighth cervical and first thoracic roots, where it is necessary to retract the subclavian artery to obtain adequate exposure. The first thoracic root has also a white ramus which must be preserved, if pupillary changes are to be avoided.

The technical difficulties, the frequent occurrence of anomalous conditions, the delicacy of the tissues involved and the necessity for thorough and accurate work combine to place these operations definitely in the front rank of major surgery.

In considering the clinical results of sympathectomy, a marked diversity of opinion has developed and the profession generally is awaiting the publication of further careful observations by a number of men who are at present working upon these cases. Royle's results, as given in his articles and shown by his moving pictures, are most encouraging, but a number of cases reported from Chicago and Boston have been disappointing. One cannot escape the feeling that perhaps in the first rush of enthusiasm at the possibility of doing something to help these unfortunate patients, some were operated upon who did not comply with the definite requirements already mentioned, or that perhaps the operative procedure varied in some small but essential particulars from that of the originator. This latter, however, would hardly apply to those cases which were operated upon by Royle in this country.

Again, it is to be remembered that the results have varied in different types of animals and a cer-

tain degree of variation may occur between the larger experimental animals and the human subject. Physiologists, too, are not in accord as to the function of the sympathetic nervous system, in spite of the consistent results of Royle's experiments.

Attention has been called by some to the intense eagerness of many spastics to try anything which offers promise of improvement, and the consequent possibility of a marked psychic effect from an operation. Others claim that whatever postoperative improvement may have occurred has been due to muscle training and the concentration of the patient's attention upon that phase of the treatment.

In spite of the diversity of opinion as to the cause of the improvement, it is undeniable that improvement has followed sympathectomy. Royle has obtained the best results in cases of gunshot wounds of the cortex in adults. In such cases mental maturity, determination and the complete development of motor sensation and activity before the onset of spasticity are factors which would unquestionably enable the patient to take full advantage of any relaxation due to the operation.

Royle also obtained favorable results in certain cases caused by birth trauma. In all cases which show improvement this consists of a relaxation or relief of tension consequent upon the removal of the increased plastic tone. Reflex activity is reduced, voluntary motion is more easily controlled and there is a marked improvement in balance. Royle reports one case in which constipation had followed the cortical injury and this was completely relieved by section of the visceral branches of the sympathetic trunk. Patients frequently speak of the relief of tension or stiffness within forty-eight hours following operation.

The increased contractile tone due to lack of the normal central control is not affected, and the exaggerated response to motor impulses remains. This causes a peculiarity of gait which has been interpreted by some observers as an indication that no improvement has taken place. It will be noted, however, that the peculiarity is due to rapid and increased contractile response, which is largely under voluntary control and which can be markedly improved by training; and that it is not due to the previous inability to change posture which was not under voluntary control and which was obstructing voluntary movements. In other words, sympathectomy removes a certain component of spasticity which is not subject to voluntary control but leaves unchanged a component which is subject to it, and

thus permits greater improvement to result from training than could otherwise be obtained.

Sympathectomy is not a cure for spastic paralysis. Nowhere in the published articles of Royle or Hunter is there to be found a suggestion that it is a cure, or that it is indicated in more than a small proportion of the cases. If the cases for operation are not chosen with a strict adherence to the clearly stated requirements, or if greater relief is expected than will result from removal of the obstruction to relaxation, the outcome is certain to be disappointing, not through any fault of the operation but through its faulty application.

After the operation a careful and systematic course of muscle training is absolutely necessary. This may begin with the teaching of voluntary relaxation of muscle groups, then careful control of simple motions, the avoidance of mental concentration which increases contractile tone, and then the gradual development of ability to control the more complex motions and to maintain balance. The finer movements of the fingers are complex and it is doubtful if any amount of postoperative muscle training will restore these completely. In suitable cases, however, it seems probable that the relief of stiffness will enable patients to become reasonably self-reliant, which will be a boon not only to the patient but to the family and friends.

This work is so interesting and the factors which enter into it are so numerous and diverse that to do it justice would require a monograph. In this paper it has been possible only to outline briefly the experimental basis, the indications, procedure and apparent effect of sympathectomy as applied to spastic paralysis. It has been necessary to omit details and to condense extensive reports and discussions into single paragraphs. Those interested will find it well worth while to refer to the original articles by Royle and Hunter.

Clinical application of sympathectomy is being carried on in several places in this country and the results will, no doubt, soon begin to appear in the literature. Until such time as the status of this operation is definitely established, the careful clinician will choose his cases with strict adherence to the requirements which seem reasonably well established, and will be most reserved in his prognosis.

One of the greatest benefits of sympathectomy will perhaps be seen in that large proportion of cases which is unsuitable for operation, because of the revival of interest in spastic paralysis and a new realization of the great improvement which may be

obtained by the proven methods of muscle training, relief of contractures, peripheral nerve surgery, etc. In the small proportion of cases in which the operation is indicated, it seems reasonable to expect improvement and, as Adson has suggested, we may consider sympathectomy as an additional resource at our disposal which will permit us to obtain a greater improvement in a certain type of case than would otherwise be possible.

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**Radium (Mesothorium) Necrosis.** An investigation into the subject of radium necrosis was suggested to Frederick L. Hoffman, Newark, N. J. (*Journal A. M. A.*, Sept 26, 1925), by a number of unusual cases of necrosis among young women all of whom had at one time or another been employed at a radium plant engaged in the manufacture of luminous watch dials. Twelve cases were studied. The patients had all done precisely the same work and in precisely the same way. They all were in the habit of wetting a penciled brush with their lips, while in use, for the purpose of painting watch dials with luminous or phosphorescent substances. Apparently, radium necrosis occurs only under certain and quite exceptional conditions. It is not the fact of general exposure to radioactive substances or nearness thereto, but apparently, the direct result of introducing such substances in minute quantities into the mouth through the insanitary habit of penciling the point of the brush with the lips. Every case investigated gave an unmistakable history of this habit, while the numerous roentgenograms clearly indicate the consequences to both the roots of the teeth and the jawbone.

## MORE ABOUT THE PARASITIC ORIGIN OF MALIGNANT EPITHELIAL GROWTHS\*

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With the feeling so well expressed by Dr. Holmes when he said "there is no quarrel here between men, but there is deadly incompatibility and exterminating warfare between doctrines," we take pleasure in presenting a further paper on the parasitic origin of malignant epithelial growths.

A complete description of the Glover carcinoma organism, with details of various laboratory and experimental clinical tests and experiences with the organism, appeared in articles in the *Canada Lancet and Practitioner*<sup>1</sup> and in *NORTHWEST MEDICINE*.<sup>2, 3</sup> In a paper which we read before this association a year ago we gave a full description of the organism; summarized briefly the results of work with experimental carcinoma in animals; reviewed some of the more commonly advanced theories of the etiology of this disease, giving our answers and some objections to these theories; and tabulated clinical facts indicative of the parasitic nature of carcinoma.

At this time let me refer to objections which the reading of many papers on this subject has most frequently brought forth and give brief answers to these objections and then, very briefly, my opinion, based on research work, of the malignancy, infectivity, inheritability and prevention of carcinoma.

1. Some object to the parasitic origin of carcinoma on the ground that no organism is known which has the power to stimulate cells to proliferate as they do in carcinoma. These objectors will insist that various chemical substances cause a cell proliferation structurally similar to that which is found in carcinoma; and we know from research work that the carcinoma organism brings about chemical changes in the epithelial cell, by its action on the cell sugars, and that it liberates a toxin of weak potency; and we maintain that it is these chemical substances, produced by the carcinoma organism within the epithelial cell, which cause the cell proliferation in carcinoma.

2. Quite in line with the foregoing objection is the one that carcinoma is not similar to any other

known infectious disease. To this I answer, that in certain instances at least it is so similar to syphilis and to tuberculosis that only by microscopic section can it be distinguished from them; yet the very men who insist that syphilis and tuberculosis are infectious will insist at the same time that carcinoma cannot possibly be infectious. Carcinoma does differ in its method of spreading throughout the body, for while the organisms alone are carried through the system in other infectious diseases, the organisms are carried within an epithelial cell in carcinoma.

I should like to ask the sponsors of this objection the following questions: First, do you consider that syphilis, tuberculosis and leprosy differ from the more commonly seen infectious diseases? Second, does the fact of that difference deter you from regarding them as infectious? Brand<sup>4</sup> has aptly stated that it is fully as rational to argue that cancer is not a disease at all because it differs in some respects from other diseases, as to state that it is not due to a parasite because that parasite must act in a different manner from other parasites.

3. Another objection is that infectious diseases have a tendency to self-termination, whereas carcinoma is persistently progressive. We answer that in acute infectious diseases the toxins liberated are generally of high potency and, therefore, stimulate more quickly the production of antibodies which tend to self-termination of these diseases, while in carcinoma the toxin liberated is of such low potency that usually it does not stimulate sufficiently the formation of antibodies. Let us bear in mind at the same time that spontaneous temporary recession and spontaneous permanent cure are not unknown in carcinoma.

4. Another objection is that carcinoma, instead of being due to one cause, as for example a parasite, is due to many causes; but even those advancing this objection find it impossible to name and prove any one, much less several causes of carcinoma, other than the parasite. These objectors mistake the *pre-disposing conditions* or what have been called the "*conditions precedent*" for the *essential cause* or the *etiologic factor*, and they mistake a *local lesion resembling carcinoma structurally* for *carcinoma itself*.

5. A further objection is that, if carcinoma is due to an organism, why should benign tumors sometimes become carcinomatous. This is easy of explanation, for the benign tumor, through continued pressure and interference with blood supply, prepares the epithelial cell for the entrance of the

\* Read before the Forty-seventh Annual Meeting of Medical Association of Montana, Lewistown, Mont., July 8-9, 1925.

carcinoma organism by lowering the resistance of the cell.

6. The objection has been raised that carcinoma cannot be due to an organism or we would at some time find carcinoma to be epidemic or endemic. Because a disease is infectious it is not necessarily found in epidemics, and particularly so with carcinoma, since the causes which bring about the lowering of the natural resistance or immunity of the epithelial cell are not epidemic; but, as already stated, carcinoma is endemic. This was clearly demonstrated by Sambon's<sup>5</sup> research work in Italy and Iceland; and is also easy to prove by studying other accurately recorded statistics of our own and of other countries, noting carefully the frequent occurrence of carcinoma in certain districts, certain streets, certain houses and certain rooms of these houses. There are recorded instances also of carcinoma occurring among animals in endemics; and these enzootics occur in spite of the fact that animals usually have a degree of immunity against carcinoma that is not enjoyed by humans. Carbuncles and tetanus are surely infectious, though, like carcinoma, they also do not usually appear in epidemics nor always in endemics.

To this endemic appearance of carcinoma the objection is raised that the deaths in so-called carcinoma houses are so far apart that they cannot be counted infectious or contagious. We answer that this is true also of tuberculosis and of leprosy as well as of carcinoma. Patients do not die quickly of any of these diseases, therefore the deaths are relatively far apart; but no one maintains that tuberculosis or leprosy is not infectious or not contagious, simply because the one contracting either disease does not die quickly. In fact, one may be infected with either tuberculosis or leprosy for years before any evidences of infection are noticeable.

7. Still another argument often used against carcinoma's being caused by an organism is the age-incidence of the disease, and this in the face of the fact that many known infectious diseases have their own particular age-incidences. In carcinoma, as already stated, the resistance of the epithelial cell *must be lowered before the organism can infect the cell and cause the development of the disease.* In other words, the epithelial tissues of the body which are most often exposed to various resistance-lowering influences, e.g., chronic infection and irritation, are the most common sites of primary carcinoma. Therefore, if we consider the types and

sites of irritations which precede the development of carcinoma, and which prepare the epithelial cell for the invasion of the carcinoma organism, we will have an explanation of the age-distribution of the disease, for we will find that few, if any, of these forms of irritation are present in childhood or in young adult life; hence the particular age-incidence of carcinoma.

8. In concluding this list of objections let me refer to one more argument advanced against the parasitic origin of carcinoma, an argument that seems to be the foremost that comes to the minds of most of those opposed to this theory, an "argument" that is not an argument at all though admittedly a correct statement of facts. I refer to the "argument" that, if carcinoma is due to a parasite, why are the acknowledged leaders of some of our largest and most prominent cancer research organizations and so many of our most prominent pathologists opposed to the parasitic theory. We admit the correctness of the statement that these men are opposed to the parasitic origin and we admit, too, the fact that they insist it is impossible for cancer to be due to a specific organism; but these negative statements do not disprove the correctness of our stand, nor are such statements in anywise unusual in the history of medicine or of any branch of science.

Demonstrable facts cannot be dismissed, much less disproved, by mere empty denial. In the words of Holmes,<sup>6</sup> "Where facts are numerous and unquestionable, and unequivocal in their significance, theory must follow them as it best may, keeping time with their step, and not going before them marching to the sound of its own drum and trumpet." Suffice it to know that from every type of human and animal carcinoma tissue an identical organism can be isolated, grown in pure cultures and subcultures, and these subcultures injected into epithelial tissues of animals, producing malignant epithelial growths. The organism can again be isolated from these resulting malignant growths and from their metastases and again cultured in pure cultures, going through the cycle of Koch over and over, times without number.

Years after Harvey had demonstrated that it is blood and not air which circulates through the arteries, acknowledged leaders still denied the facts which Harvey had demonstrated most clearly and numbers of medical men accepted these mere denials as final, and reverted to the belief that air and not blood circulates through the arteries.

After Jenner's method of vaccination against smallpox had been successfully used on hundreds of people, a committee was appointed to investigate into the efficacy of this vaccination. The committee, after observing the work of Jenner and his supporters, reported that they found no evidence that any benefit was to be derived from vaccination; some even maintained that vaccination was in fact spreading disease instead of preventing it.

Holmes<sup>6</sup> observed that puerperal infection was prevalent in the practices of certain less-cleanly physicians and especially did he observe that the mortality-rate was very high in instances where the physician went from the postmortem table to the delivery of a woman in labor, or from attendance on a case of puerperal sepsis to a new case in labor. In 1843 he published an essay, in which he maintained that "puerperal fever is so far contagious as to be frequently carried from patient to patient by physicians and nurses." This insistence on the infectivity and contagiousity of puerperal sepsis made him the target for much hostile criticism for more than a decade and especially at the hands of the professors of obstetrics of the University of Pennsylvania and of Jefferson Medical College.

Semmelweis, assistant professor of obstetrics at the University of Vienna, observed that in those obstetric wards set aside for the instruction of medical students, and in which frequent vaginal examinations were made, the incidence of puerperal infection was very high, while in those wards set aside for the instruction of midwives, and in which vaginal examinations were seldom made, the incidence was strikingly lower. This difference, he argued, was due to lack of proper cleanliness on the part of those making the examinations who were thereby infecting their patients. As a reward for his efforts Semmelweis saw his theories condemned by his own university and by a committee from the French Academy of Science, and he was forced to retire to a smaller institution, where the adoption of his measures of cleanliness reduced the puerperal sepsis mortality from sixteen to less than one per cent.

After Pasteur had successfully immunized animals and humans against rabies, a district in England sent a committee of scientists to inquire into his work and they reported that there was no virtue in his immunization treatments.

There still live those who can recall when Lister's old associates deserted him and were humiliated by his promulgation of the doctrine that septic infec-

tion was due to microorganisms. Certain of his contemporaries compiled quite extensive statistics to prove that antiseptic and aseptic precautions in no wise diminished the occurrence of infections in surgical procedures.

When Koch demonstrated the tubercle bacillus as the etiologic factor of tuberculosis, he met with much opposition from other medical men and at that time was far from being considered the eminent scientist the world later acclaimed him to be. Pathologists of those days decried Koch and his parasitic doctrines regarding tuberculosis.

To come to our own day, and to the subject now under consideration, it is interesting to recall that the late Doyen,<sup>7</sup> a distinguished scientist of Paris, reported in detail in 1903 how he had been able to isolate from carcinoma tissues, and to culture, an organism which he called the "micrococcus neoformans." Because of the reported early failure of others to confirm his results the work was discarded and his lead soon abandoned.

Clarke,<sup>8</sup> Bachelor of Medicine and Fellow of the Royal College of Surgeons, London, after much intensive work on this subject described an organism observed by him "in cancer cells" and his reports were denied credence. In his efforts to bring his work before the profession he secured a rehearing before a committee, though he was denied the request that at least one biologist be appointed on that committee. He submitted a written report of his observations and experiences together with stained slides and drawings of the organism, all tied together in an orderly bundle which he "clearly specified and marked 'The Argument'." The committee, without even so much as untying the cord which held the bundle together, passed unfavorably on his work and condemned the "theory of the parasitic etiology of cancer."

Smith,<sup>9</sup> of the laboratory of plant pathology, U. S. Department of Agriculture, Washington, D. C., isolated from crown gall and cultured and described a bacillus, the "bacillus tumefaciens." At that time he called attention to the probable relationship of this bacillus to the etiology of carcinoma, though his observations do not seem to have been given the serious consideration which they certainly deserved. His work is not only a very important contribution to the investigation of the etiology of carcinoma, but it has incidentally directed attention toward one of the probable sources of carcinoma infection.

Young,<sup>10</sup> assistant gynecologist of The Royal In-

firmly, Edinburgh, working independently and without previous knowledge of the work done by Glover, isolated and cultured and minutely described in its various phases the carcinoma organism, his descriptions being essentially in accord with those of Glover, but only of late does he seem to have received more than a casual hearing and even now many are quick to condemn who make no claim of having attempted to repeat or check up on his work.

Nuzum,<sup>11</sup> of Chicago, who has done considerable research on this subject, described a coccus which he has isolated and cultured and which appears to be similar to the organism described by Doyen in 1903, both of which appear to be the coccus stage of the organism as described by Glover and Young.

Loudon and McCormack<sup>12</sup> of Toronto have demonstrated the relationship to each other of the organisms described by the men mentioned above, and the relationship of each to the Glover microorganism, and finally the relationship of all to carcinoma.

These men and others have reported varying degrees of success in producing malignant epithelial tumors in animals by the injection of pure subcultures of the organisms isolated by them, and have recovered the same organisms from the animal lesions produced. Each of these men has no doubt been working with one or other of the different phases of the real cause, the etiologic factor, of carcinoma; and their work, their observations and their results are of such character that they cannot be dismissed by the mere assertion that they were all mistaken.

#### MODUS OPERANDI OF THE CARCINOMA ORGANISM

A great amount of laboratory work has been done and countless tissue sections made by Glover in his efforts to secure an accurate and complete microscopic picture of the development of animal experimental carcinoma, as produced by the injection of pure subcultures of the carcinoma organism. This work, I understand, is almost completed and a report that will show the development of such carcinoma from the time of first injection to the stage of typical carcinoma tumor is being prepared for early presentation.

In this paper I shall limit myself to a few brief statements, intended to give a word picture of my idea of the *modus operandi* of the carcinoma organism in producing carcinomata outside the laboratory. Let me depict, for example, the development of a carcinoma of the breast, more properly termed a col-

umnar or cuboidal cell variety of epithelioma. The resistance of a single epithelial cell of the breast, or a group or a mass of such cells, has been lowered by whatever cause. One or more carcinoma organisms find their way into this cell or into several of this group of cells of lowered resistance and into the nucleus or nuclei. The organism multiplies within the epithelial cell and gives off its toxin, so weak and so infinitesimal in quantity that its absorption does not stimulate sufficiently the formation of antibodies. The toxin and other products of the activity of the organism are sufficient, however, to stimulate the epithelial cell to divide and presently from each invaded cell we have two cells, each containing carcinoma organisms; these two cells divide and then we have four infected cells; this cell division goes on *ad infinitum*.

In the earliest stage of its development one single infected epithelial cell, or one small group of such cells, constituted the whole extent of that carcinoma; and at that stage the destruction or removal of that single cell, or group of cells, would have ended that carcinoma. Later that carcinoma consisted of two or more infected epithelial cells, then four cells, then eight, and so on indefinitely. As the cells became crowded or were subjected to pressure by clothing, manipulation, examination, etc., one or more of these infected cells was forced along lines of least resistance into the lymph channels or into the blood stream and lodged in the axillary lymph nodes or in the liver, lung or elsewhere. As these dislodged cells carried within them the carcinoma organism and as they found nourishment in their new locations, they continued to proliferate and thus formed new tumors which we call metastases. True metastases can never occur in any other way. Very naturally these metastatic tumors, no matter where located, consist of breast epithelial cells; they could not be anything else any more than transplanted slips from a grape vine could develop into anything but grape vines. The transplanted grape vines will differ from one another in vigor and growth as the environments of their new locations differ, but all will still be grape vines and similar to the parent grape vine; so, too, the metastatic carcinoma tumors will vary as their new environments vary but all will consist of epithelial cells of the same type as the mother tumor, from which the infected cell or cells have been carried.

With the patient absorbing toxin and with the resistance of the epithelial cells of the body lowered, it is not surprising that some carcinoma organisms

find their way into additional epithelial cells of structures of the body other than the site of the primary lesion. In such an instance we have, not a true metastatic tumor, but a newly developed carcinoma.

#### VARIATIONS IN THE DEGREE OF MALIGNANCY

Laboratory experiments with tissues from a series of cases of carcinoma of the breast have led to certain definite conclusions regarding the variations in the degree of malignancy of different cases. In this series it was seldom that an organism which proved to be a good toxin producer was isolated from a scirrhus type carcinoma, while it was common to isolate an organism that was a good toxin producer from a medullary type carcinoma. It was also noted that, where changes were made in the composition or the reaction of the culture medium, the morphology, rate of growth and specific products of the organism were affected. This is also seen where the organism is gradually attenuated by keeping the cultures for considerable lengths of time under conditions unfavorable to its growth, for it loses its power to act on sugars and milk and to produce a toxin of other than very low potency. These and other laboratory and clinical facts lead to the following conclusions:

1. With less toxic strains of the carcinoma organism, or with greater relative resistance on the part of the patient, we have less cell stimulation and less action on cell sugars and a correspondingly slower cell proliferation (thus permitting the newly formed cells to more closely approach normal in structure), less asymmetry, more connective tissue formation, and less malignancy, a more or less pronounced scirrhus-type carcinoma.

2. With the more toxic strains of the organism, or strains that cause greater action on cell sugars, or with less relative resistance on the part of the patient, we have greater cell stimulation and a correspondingly rapid cell proliferation (which prevents the newly formed epithelial cells from approaching normal in structure or differentiating), more asymmetry, less connective tissue formation and greater malignancy, a more or less pronounced medullary type carcinoma.

Therefore, other factors being equal, in cases with the more toxic strains of the organism we have the higher percentages of undifferentiated epithelial cells, while with the less toxic strains of the organism we have the lower percentages of undifferentiated epithelial cells. From this it follows

that prognosis is less favorable in cases which present the highest percentage of undifferentiated cells, the unfavorable prognosis being due to the same factors which prevent the differentiation of the cells, viz., the relative toxicity of the invading organism or the relative lack of resistance on the part of the host. Clinicians observed this relationship between the percentage of differentiated cells and the degree of malignancy of the epithelial tumors and, based on that observation, have classified epitheliomata accordingly. In other words, the larger the percentage of undifferentiated epithelial cells, the greater the malignancy and the less favorable the prognosis; and *per contra*, the larger the percentage of differentiated epithelial cells, the lower the malignancy and the more favorable the prognosis.

#### INHERITABILITY

Without referring to the many excellent papers that have been published recently in explanation of theories, old and new, relating to heredity, I shall express briefly my ideas of the inheritability of carcinoma.

Not a great many years ago tuberculosis was looked upon as a disease acquired almost exclusively through heredity; and as grounds for that belief many instances were referred to in which the children of tuberculous parents were likewise tuberculous. Fortunately the correct explanation of this incidence of tuberculosis is now better understood by the profession and the laity as well.

Until quite recently, and in too many instances even to the present day, physicians and their patients considered carcinoma as being a hereditary affliction. Fortunately here, too, the old ideas are clearing up and increasing numbers are coming to realize that carcinoma is not hereditary in the usual sense of that term. Every individual no doubt inherits a more or less marked familial immunity against or a susceptibility to carcinoma, the same as all inherit other familial predispositions and characteristics. In addition to this the offspring of carcinoma-infected parents, conceived during the time of the parents' affliction, are no doubt further lacking in natural immunity or normal resistance against carcinoma. The increased exposure to infection of this resistance-lacking epithelium accounts for the fact that carcinoma is so frequently found in more than one member of the same family or household. This increased exposure exists during the active course of the disease as countless carcinoma organisms are then given off from the lesion;

and it continues to exist for years thereafter, due to the continued presence of the very resistant spores and spore-sacs which have been described elsewhere.<sup>1, 2</sup>

The factors at work to bring about these multiple occurrences are:

1. The inherited lack of normal or natural resistance or immunity.

2. The presence of great numbers of the carcinoma organisms given off from the carcinoma lesion, or the spores or spore-sacs of these organisms.

3. The increased virulence of these organisms (due to the fact that they have just passed through a desirable culture medium, the human body).

With tuberculosis and with leprosy these facts about heredity are quite well established, and recognized by practically everyone today, although their early presentation was considered as much a fanciful dream as is our present presentation of the facts concerning carcinoma.

In a word, then, we do not consider carcinoma, as we meet it, as being inherited in the sense that the infected epithelial cell or the offending organism has passed from parent to offspring. If such infected epithelial cell did pass from mother to fetus, we would expect the resulting carcinoma to prove fatal to the new host during the first few years of its life, and that is probably the correct explanation of cases reported of deaths of infants from malignant epithelial growths.

#### PREVENTION OF CARCINOMA

Until the time of Jenner it was not uncommon for the people of each generation to see their numbers decimated by epidemics of smallpox. Such deathrates from smallpox are unknown in our day among those properly protected. This comparative wiping-out of the deathrate is not due to any advance in treatment but to prevention by vaccination against smallpox.

Prior to the days of Pasteur the development of rabies with its unspeakable sufferings and horrible deaths among those bitten by rabid animals was appalling. These awful consequences of the bite of a rabid animal are no longer the nightmare they formerly were and this change is due, not to improvement in the method of treating rabies, but to the employment of prophylactic measures, viz., immunization of those exposed to rabies infection. This was made possible by the recognition of the fact that rabies is an infectious disease.

In modernly civilized countries, where means of immunization and prevention are quickly adopted, cholera and bubonic and pneumonic plague are robbed of their powers to wipe out almost whole settlements. This was well demonstrated recently in the prompt checking of an outbreak of pneumonic plague in one of our Southern West-Coast cities. I happened to be in touch with the medical officer in charge of the port district affected and the measures adopted were thorough and stringent and therefore effective; and all based on the fact that these diseases are recognized as being infectious and contagious.

The victim of a developed tetanus infection has no more happy outlook now than in years gone by, but by the adoption of means of immunization in cases exposed to tetanus infection, the administration of tetanus antitoxin, we are practically certain to prevent the development of tetanus.

Yellow fever, which filled with dread whole states and provinces of our own and of other countries, has been robbed of its death-dealing sting, not by any advance in the method of treatment but by proper preventive measures which it was possible to adopt only after the source of yellow fever was recognized.

From the point of view of medication the treatment of typhoid fever today does not differ essentially from what it has been for decades, yet the deathrate per hundred thousand of population was lower the past decade than for any decade in generations. And this applies even more particularly to the men of our armies and navies. During the Spanish War one man of every five in our military service suffered an attack of typhoid fever, with a mortality-rate slightly above ten per cent. During our two years of the World War we had a total of 1038 cases of typhoid fever and a total of 158 deaths. If the incidence and deathrate were in the same proportions as during the Spanish War, we would have had 291,637 cases instead of 1038, and 30,916 deaths instead of 158. This happily-lowered rate of incidence and the consequent lowered deathrate were due directly to immunization against typhoid fever by the use of vaccine, and the adoption of other preventive measures, and all dependent on the fact that the typhoid bacillus is recognized as the etiologic factor in typhoid fever.

Since the development of antitoxin the very meaning of the word diphtheria has, in effect, been changed for children and for their parents; and

now we see scarlet fever conquered even more completely than is diphtheria. Measles has more recently been added to the list of diseases preventable by serum immunization.

Because tuberculosis was looked upon by physician and layman as being noninfectious and non-contagious, proper precautions were not taken to prevent its spread. The result was the awful increase of the disease to the stage where all civilized mankind became appalled at the rapidly growing armies of its victims. Koch entered the fight with the announcement that the tubercle bacillus is the etiologic factor in tuberculosis and that tuberculosis is both infectious and contagious. Eminent physicians, pathologists and scientists belittled this early announcement and "proved" to their own satisfaction and incidentally to the detriment of the whole world that tuberculosis *was not* and *could not* be caused by a parasite, doctrines similar to those now being taught regarding carcinoma by eminent physicians, pathologists and scientists of today. His unwavering persistence, based on the fact that his scientific statements were correct and, therefore, impregnable to attack, won the day for Koch and made possible the liberation of mankind from the "White Plague." A few weeks ago the secretary of a national society for the control of tuberculosis stated that, if the present rate of decrease continues, a death from tuberculosis will be as uncommon in another twenty years as is a death from smallpox today. This is made possible solely by sanitary precautionary measures adopted to safeguard against the spread of tuberculosis and without the assistance of an immunizing serum or vaccine, such as we have in some of the diseases enumerated above, and which we are confident will be available in the fight against carcinoma.

Let me emphasize the fact that the lowering of the rate of incidence and the consequent lowering of the deathrate of each of the above diseases is based essentially on the recognition of the infective nature of that disease and the adoption of measures either to prevent exposure to infection or to vaccinate or immunize against infection.

*We are positive, that as soon as medical profession and laity become convinced of the infectious nature of carcinoma and its contagiousity, the adoption of preventive measures which will follow will effect a lowering of the rate of incidence of this disease, comparable with what obtains today with tuberculosis; and the further development and employment of immunization measures will result*

*in as gratifying an immunity to carcinoma as is obtained today by immunization against diphtheria or scarlet fever or by vaccination against smallpox or typhoid fever. Furthermore, as a result of the already described immunization work on animals,<sup>2</sup> and in view of the results thus far obtained in immunization of humans, we are fully convinced that we stand today at the beginning of the end of carcinoma.*

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(Lack of space has prevented publication of sections on contagiousity, treatment, experiences with carcinoma antitoxin and microphotographs, all of which will appear with author's reprints.)



TERATOMA TESTIS\*

ITS RADICAL OPERATION AND REPORT OF TWO CASES.

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The object of this paper is to discuss briefly the pathology and treatment of malignant tumors of the testicle and to report two cases of the radical operation. This report is prompted by the recent discussions in the literature, most of which are unfavorable to this operation as advocated by Hinman. Handfield-Jones<sup>1</sup> in England has come out flatly against it and in this country it has received a very limited measure of support.<sup>2</sup> The objections are that it is too extensive and too dangerous a procedure and that the results do not justify the surgical risk. The difficulties are more imagined than real and these two cases are reported to emphasize its comparative simplicity and the absence of any unpleasant postoperative complications and sequelæ.

The improvement in radiotherapeutic technic and management of these tumors does not minimize the importance of radical surgery in certain selected cases. Dean<sup>2</sup> has recently published the results in 63 cases treated by x-ray and radium, while Hinman<sup>3</sup> has done the same in 79 cases of the radical operation which have been reported. In reviewing their statistics one is impressed by the fact that a proper combination of both methods offers the most hope but that sufficient time has not elapsed since the adoption of these modern methods of treatment to permit of final conclusions as to their effectiveness. The question is still an open one and a careful analysis of end-results from time to time, as the number of cases increases and as diagnosis, selection of cases and technic improve, is necessary to establish the soundest method of treatment. All cases should be reported with a view to adding to the evidence accumulating in this discussion.

These tumors present some interesting pathologic features. There is probably no other neoplasm which has been called so many names. This is because of their complex structure, yet careful studies have shown that for all practical purposes there exists only one type of tumor, namely a teratoma.<sup>4</sup> The benign tumors are so rare that for clinical purposes they may be disregarded. The same can be said of malignant growths other than teratoma. For working purposes the following classification modified from Ewing may be used.<sup>5</sup>

- |                 |   |   |   |
|-----------------|---|---|---|
| Teratoma Testis | } | A. Complex or mixed tumors.                       | (Embryoma or dermoids (rare).<br>Teratoids).                      |
|                 |   | B. Simple monodermal type or embryonal carcinoma. | (Seminome of Chevassu, Spermatocytoma of Schultz and Eisendrath.) |

Of the teratoma there are two types, one the mixed tumors of complex structure, containing derivatives of all three germinal layers, endoderm, ectoderm and mesoderm; and the other a monodermal type, made up of large polyhedral cells with a diffuse or alveolar arrangement. Of the first group or mixed tumors the adult embryomas or dermoids are comparatively rare. They are characterized by the presence of definite rudimentary organs with some attempt at an orderly arrangement to resemble an embryo. They are slow growing and have little tendency to progress beyond the scrotum.

Practically all the tumors are equally divided between the teratoids and the embryonal carcinomas. The teratoids are composed of embryonic tissues which are recognized as derivatives of all three germinal layers, but arranged in such confusion as to eliminate any resemblance to an embryo. Careful sectioning of the monodermal tumors or embryonal carcinomas will often reveal traces of other tissues, so that the majority of pathologists agree with Ewing in considering them to be one-sided developments of a teratoma, with a suppression of the other elements. This is the type to which the name seminome has been applied by Chevassu, who considers them to be pure celled growths, derived from adult spermatocytes and not teratomatous in origin.

The pathogenesis of these tumors explains their complex structure. They all arise in the rete testis, that is, in that portion where the complicated epithelium of the seminiferous tubules becomes simplified, where spermatogenetic function ceases and where the tubules become a net-work of collecting canals. It is supposed (Ewing) that here some of the primitive sex cells fail to realize their physiologic development into spermatogonia and become susceptible to aberrant growth. When this occurs the resulting tumors are complex, since they are derived from sex cells which are totipotent, that is, potentially capable of producing all of the tissues that are derived from the three germinal layers.

Metastasis occurs, as a rule, in the lymphatics accompanying the spermatic vessels (see fig. 1). The first nodes reached by these lymphatics are situated in front of and to the side of the aorta for

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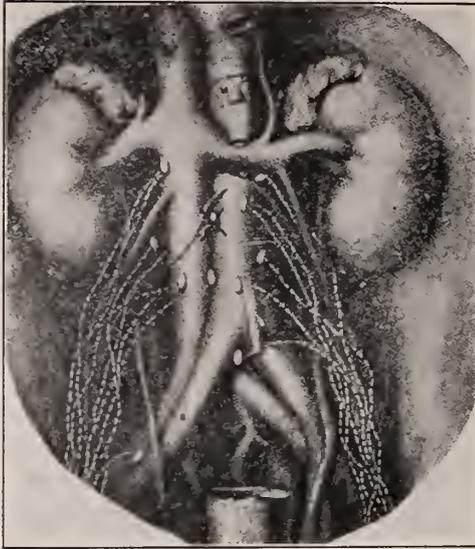


Fig. 1. Diagrammatic representation of the primary lymph zones of the testicle. Early extension to these abdomino-aortic glands has resulted in a high mortality for these tumors (Hinman).

the left testicle and over the vena cava for the right. There are usually four or five on each side and they are grouped in an area bounded above by the renal pedicle and below by the bifurcation of the aorta. These abdomino-aortic glands are the only barriers between the testicle and thoracic duct. The inguinal glands are involved only when there is an extension of the tumor to the scrotum. Discontinuous metastases to the lungs and brain may occur by way of the circulation but this is rare when compared to the lymphatic invasion. Nearly all the early metastases are found in the abdomino-aortic glands.

It is the inaccessibility of these glands that has prevented surgeons in general from adopting the well known principles that apply to malignancy elsewhere, namely, the removal of the growth and the lymphatics that drain the area involved. They have been content with a simple castration in the hope that extension has not taken place. This hope cannot be based on either the size of the tumor or its duration, for neither is an index of whether or not metastases have occurred.

The fact that over 80 per cent of the cases treated by castration will finally die with abdominal metastases has stimulated progressive surgeons to use more radical measures. To this end Hinman has advocated the operation originated by Cuneo and Gregoire in France. This consists in the removal of the testicle and the primary lymphatic zone, shown in fig. 1.

The technic, briefly, is as follows. The cord is

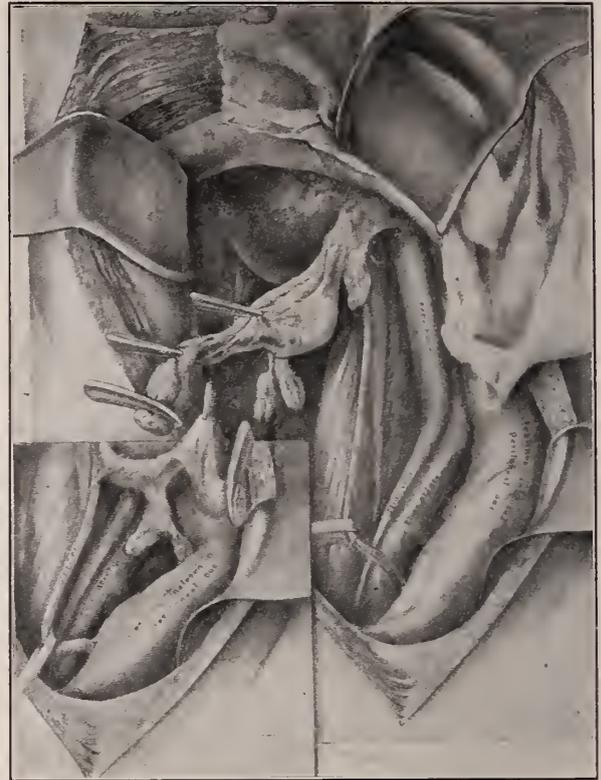


Fig. 2. Drawing to show exposure necessary and method of dissection of lymphatics, fat and fascia from below upward (Hinman).

exposed through a high inguinal incision and tightly constricted by a rubber catheter, so that manipulation of the testicle will not spread cancer cells. If the mass on delivery proves to be a tumor, the cord is clamped and divided with a cautery. The skin incision is then continued upward to a point opposite the tip of the twelfth rib, when it curves backward, paralleling the rib to the lumbocostal space. The muscles are divided in the line of the incision down to the peritoneum. This is stripped back from below upwards and retracted inwards exposing the iliac vessels, aorta and vena cava (see fig. 2). The rest of the operation is in two steps; first, the exposure and removal of the spermatic vessels; second, the removal of the lymphatics, fat and fascia from the common iliac vessels, aortic bifurcation and from the vena cava as high as the renal pedicle. This upper limit must be reached, for there is usually a large gland between the aorta and the vena cava just below the renal pedicle. Drainage is placed in the upper and lower angles and the wound is closed by a firm continuous suture.

This operation has definite limitations. It should never be undertaken, if abdominal metastases can be

palpated, for experience has shown that these cases are not suitable for surgery. Likewise, there will be found occasionally on opening the abdomen metastases which could not be palpated prior to operation, but which are so extensive as to preclude their removal. Here radiotherapy is the only hope for the prolongation of life.

Hinman<sup>3</sup> has shown, in the 79 cases reported, that the radical operation has already reduced the ultimate mortality 100 per cent as compared with that after orchidectomy, giving 30 per cent cures as against 15 per cent for the latter procedure. This reduction in mortality has occurred in spite of the fact that the operation is comparatively new and, therefore, liable to error in technic and application, so that we may expect a greater percentage of cures as improvement comes with greater experience.

Barringer and Dean,<sup>2</sup> who are the chief exponents of radiotherapy for these tumors, make only moderate claims. The x-ray's greatest value is in checking recurrences and large metastases and in many instances has given brilliant results. As a prophylactic against abdominal extension it has not proved successful. It is, however, a most necessary and valuable adjunct in the treatment of these tumors. The radium pack is no longer used, the high voltage x-ray having taken its place.

The best results will be obtained when the methods are combined as follows:

First: When metastases can be demonstrated clinically, orchidectomy and x-ray therapy are indicated. Second: When metastases cannot be demonstrated clinically, the radical operation followed by x-ray therapy is indicated. Third: In those occasional instances, when metastases, not palpable prior to operation, are found on opening the abdomen to be too extensive for removal, the treatment is limited to orchidectomy and x-ray.

The following cases of the radical operation are reported to emphasize its comparative simplicity and the absence of postoperative complications and sequelae.

#### CASE REPORTS

Case 1.\* The patient, aged 26, presented himself in April, 1922, with a painless swelling of the right testicle of one year's duration. The onset was gradual and without apparent cause. The salient features of the examination were a positive Wassermann and a pyuria, necessitating the elimination of both guma and tuberculosis in the diagnosis. An intensive course of antisyphilitic treatment did not affect the size of the tumor and cystoscopy and renal study showed a colon bacillus pyelitis but no evidence of tuberculosis. There were no abdominal metastases.

\* This case is included as a personal communication in Hinman's analysis in Cabot's Urology, but has never been reported.



Fig. 3. Photograph of tumor, an embryonal carcinoma or seminoma, from Case 1. There is complete replacement of the normal structures. A represents a portion of the epididymis. The mottled appearance is caused by areas of necrosis.

ses palpable, the x-rays of the lungs were negative. so a radical operation was performed two weeks after admission.

On abdominal exposure there was found a marked enlargement of the glands about the right common iliac, aortic bifurcation and along the vena cava. These were removed in one piece, together with a large gland just below the renal pedicle. Although they appeared to be metastatic growths, examination showed the enlargement to be caused by an endothelial hyperplasia.

The report by Dr. Rusk, Professor of Pathology, University of California Medical School, was em-



Fig. 4. Photograph showing abdominal scar in Case 1, two months after operation. There is no paralysis or abdominal weakening and patient continues his work as a laborer.

bryonal carcinoma of testis without apparent extension or metastasis (see fig. 3). There was no shock, no infection or other complications and the patient made a rapid and uneventful recovery. He left the hospital two weeks after the operation. Subsequent examinations have shown no evidence of metastases and he reports by letter that he is in excellent health (fig. 4).

Case 2. The next case was seen through the courtesy of Dr. Whitty of Seattle, on March 28 of this

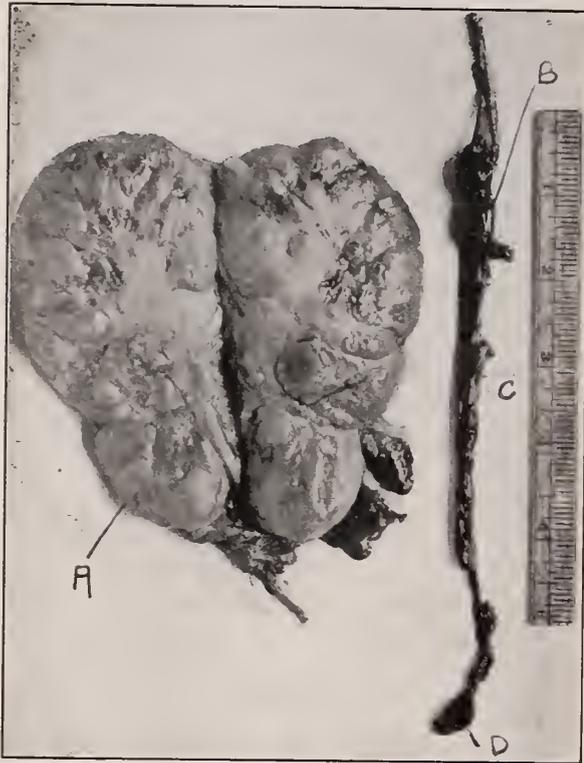


Fig. 5. Photograph of specimen from Case 2. A, testicular tumor. B, enlarged gland just within internal ring. C, spermatic vessels and lymphatics. D, gland at termination of spermatic artery just below renal pedicle. There were no metastases.



Fig. 6. Photograph of abdominal scar of Case 2, taken one month after operation, demonstrating the length of incision and absence of any hernia. Patient has been receiving deep x-ray therapy.

year. This patient, aged 46, had a large painless tumor of the left testicle of eighteen months duration. The growth extended up to the external ring and was pyriform in shape. The Wassermann was negative.

A diagnosis of teratoma was made and the radical operation performed. There was remarkable absence of any glandular enlargement in this case. There was one large gland just within the internal ring, another wedged between the common iliac artery and vein and one just below the renal pedicle at the termination of the spermatic vessels, but the aorta was comparatively free, even at the origin of the inferior mesenteric artery, where metastases frequently occur when the tumor is on the left side. The spermatic vessels and lymphatics were removed up to their origin and also the gland between the common iliac artery and vein (see fig. 5). Examination showed no metastases. The primary growth was reported to be a sarcoma, but upon examination of the slide I found it to be a typical embryonal carcinoma.

This patient's convalescence was likewise rapid and uneventful and except for a slight phlebitis involving the left leg there were no complications. The wound healed by primary union. The patient has been getting deep x-ray therapy since operation (fig. 6).

In the absence of any abdominal metastases it may seem that both these cases have been subjected to an unnecessary surgical procedure and that they would have been cured by simple castration. However, it is impossible to tell whether or not metastasis has occurred and all cases, in whom no extension can be demonstrated clinically, should be exposed to the surgical risk in the interest of the majority, in whom early metastasis will be found.

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Does Roentgen Ray Modify the Course of Whooping Cough? H. F. Faber and H. P. Struble, San Francisco (*Journal A. M. A.*, Sept. 12, 1925), report the results of a study based on equal numbers of control and test cases selected in such a manner as to afford if possible a just comparison between those treated and those not treated with the roentgen ray, and the remaining twenty-two were treated with antipyrin. Selection was made by alteration. The patients who did not receive roentgen-ray treatment made a better showing in practically all respects. The authors believe their figures afford strong evidence against the assumption that the roentgen ray has a curative or even beneficial physical effect in the treatment of whooping cough.

## DUCTLESS GLAND DISEASE

## THE ROLE OF PHYSIOTHERAPY IN ITS TREATMENT\*

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It is well to remind ourselves occasionally that the first duty and privilege of every practicing physician is to relieve suffering. It should be our earnest endeavor always "to make the patient feel better," if it is within our power to do so, and quite irrespective of whether this alleviation of symptoms results in a cure of the underlying disease or not. The patient seeks the physician in order to receive treatment that will result in his feeling better; he is only secondarily interested in what is the matter with him.

It is, of course, axiomatic that intelligent treatment must be predicated on accurate diagnosis. The trouble with many of us is that we practice scientific diagnosis most elaborately, with all manner of impressive tests and appliances (many of which, by the way, are quite unnecessary for the case at hand), but a similar elaborate attack on the disease so gloriously labeled is frequently spruned or ignored because, forsooth, the therapy is not sufficiently and scientifically specific to satisfy our critical taste in therapeutics. We do not make the mistake of placing the cart before the horse, but the diagnostic horse too often trots off proudly, head erect, trailing an empty treatment cart behind. The tidal wave of therapeutic nihilism and lofty skepticism that has swept over the medical profession during the last half century may have cleaned out much rubbish, but it has left precious little in which we can retain scientific confidence, so that many of the most learned and highly educated among us are hardly fit to practice the healing art.

This purging of the therapeutic stables has been largely confined, however, to old fashioned drug therapy, but we must not be blind to the fact that operative therapy, chemotherapy, serotherapy and organotherapy have swept in with banners flying to take its place. Glandular therapy has become the latest therapeutic football to be kicked about between idolatrous worshipers and intolerant cynics. Amidst all this therapeutic novelty, at once acclaimed and scorned, physiotherapy, of ancient heritage, has been quietly ignored or forgotten except by the few who have learned to appreciate its

benefits. It is not only justifiable but positively incumbent upon us to utilize all modes of treatment that may stimulate, comfort, sooth or energize, provided only that none of these measures do actual harm. Physiotherapy, including massage, gymnastics, hydrotherapy, heliotherapy and electrotherapy, provides a varied and resourceful therapeutic armament that should not be neglected.

What is its field of usefulness in the treatment of ductless gland disease? The answer to this query depends on how sharply we restrict the term endocrinopathy. Some would include only a few diseases of glaring unimpeachable character, such as myxedema, adenomatous goiter (toxic and non-toxic), Grave's disease, Addison's disease, Froehlich's syndrome, acromegaly, eunuchism, tetany and diabetes mellitus. These disease pictures are diagnosed ordinarily, when symptoms and signs are startlingly obvious. By that time lack of hormones or excess of hormones has become so pronounced that powerful remedies are absolutely obligatory. We must supplement for lack of function by such extracts as thyroid and insulin, and we must resort to surgery to excise excess. The role of physiotherapy in any and all of the above syndromes is but a minor one, but not to be ignored.

Thus Frederick Allen has stressed the importance and benefit to be derived from restricted exercise in mild cases of diabetes, especially in those that tend to be obese. Muscular exercise bears a relation to the diet, and by burning up part of the foodstuffs tends to reduce blood sugar and increase the tolerance, in all but the severest grades of diabetes. The latter group are, however, made worse by exercise, because of the heightened metabolism or nervous influences and they are better at rest. Graduated exercise under metabolic control is, therefore, a valuable detail in the management of diabetes. The paramount importance of an exact dietary regime, combined with insulin, should not blind us to all other measures that help in building up strength and resistance.

Many authors, among them George Dock and Nellis Foster, have given space to physiotherapy in their consideration of the treatment of exophthalmic goiter. Skillful massage is the most useful means at our command to relieve restlessness. The massage should be superficial, not deep, and it is not a substitute for exercise; successful treatment leaves the patient in a state of comfortable relaxation, a consummation that is most desirable in these high strung hyperemotional individuals. Hot or cold

\* Read by invitation before California Association of Physiotherapists at the Fifty-fourth Annual Meeting of California Medical Association, Yosemite, Calif., May 19, 1925.

packs and alcohol rubs are beneficial in promoting sleep at night. These measures are essential to a well conducted rest cure, which should never be neglected preliminary to operation and subsequently also. The damaged circulation is aided by thyroidectomy, lugolization and digitalization primarily, but proper rest and later graduated exercises should not be forgotten. Electrotherapy in the form of galvanic, faradic, static, high frequency and auto-condensation, has been recommended, though the element of suggestion probably plays a large part in the benefit derived. We need not, however, relegate this formidable weapon of suggestion to the various cults.

In status thymicolymphaticus, exercises directed to chest expansion may provide more room in the thoracic cavity for an enlarged thymus, and thus relieve pressure on trachea and aorta.

If the above measures constituted all that could be expected from physiotherapy in ductless gland disease, a paper on this subject would hardly be warranted. But a much broader horizon is unfolded, if we consider the role of the endocrine system in the building, formation and maintenance of the total constitution. Wunderlich distinguishes a strong, an irritable and a lax constitution. Falta likewise groups individuals into those with stabile, debile and labile constitutions and this distinguished authority remarks on the frequency with which there will be found a correspondingly stabile, debile or labile ductless glandular component. My own experience with abnormal endocrine types leads me to link up emotional reaction with skeletal make-up, not invariably, but with sufficient frequency as to justify a broad classification into the undernourished asthenic and the sluggish obese. In both these groups there are abundant indications and applications for various physiotherapeutic procedures.

The debile vegetative nervous system, under the demands that life makes on the organism, results in an undernourished constipated enteroptotic asthenic, "readily accessible to irritations," with a tendency to so-called neurasthenia, hysteria and vasomotor trophic neuroses, and a poor resistance to infections. The exact endocrine analysis of this large group of patients (mostly females) is often extremely difficult, if not largely speculative. These unfortunate "weak sisters" wander from gastroenterologist to orthopedist, from otorhinolaryngologist to endocrinologist, from gynecologist to psychiatrist. Rarely are they fundamentally helped by any one of these skillful specialists, if the tinkering be confined to one specialty at a time; whereas a collective group

attack from the wider outlook of the constitution as a whole, by diet, eradication of infectious foci, organotherapy and supervised expert physiotherapy, can oftentimes work a most surprising transformation.

Postural training, breathing exercises, cocoa butter massage, passive and active resistance movements, graduated gymnastics, quartz lamp pigmentation, contrast showers, needly spray and Scotch douche—all have their place in this regime. Amazing indeed is the seeming miracle that moulds a slumped, slender, hypotensive and exhausted organism into a well knit, compact balanced body with mental and emotional poise and equilibrium and twenty pounds gain in weight. It requires infinite patience, and is not always successful (mighty little in medical therapeutics is guaranteeable), but it can sometimes be done and it is worth while trying. You can take a horse to water but you can not make him drink. You can serve the most appetizing dishes that would satisfy the most fastidious, but you can not make the asthenic eat—not until you have stimulated a desire to eat, and physiotherapy is an excellent aid in this direction.

I have in a recent paper commented on the endocrine aspects of endogenous obesity and emphasized its characteristics in children. The average boy or girl consumes astonishing quantities of food without the least inclination to obesity. Their metabolic hormonal reserves are amply able to cope with their caloric demands. Their physical activity is prodigious, as exemplified by youthful exuberance in all manner of play and sport. If their inheritance has been fortunate and they escape accident or serious disease, especially endocrine impairment, they progress into adult stability, possessing an "enviable equilibrium of their vegetative functions, their metabolism and their psyche." Contrast here with the apathetic, sluggish, pudgy boy or girl who exercises from chair to chair, or the slender frail asthenic whose physical and emotional activities are meagre, feeble and speedily exhausted.

The fat boy or girl and the fat man or woman, whether their obesity be purely exogenous or endogenous or both endogenous and exogenous, require not only diet, but also exercise; the part of glandular therapy in the regime has been referred to in a previous paper. How should they be exercised, how should their bodies be handled? You can equip a gymnasium for them, broadcast the daily dozen, hire a horse, or enter them in a golf club, but you can not make them utilize these opportunities, for they rarely have sufficient will power at first to carry through a program of exercise that is consti-

tutionally obnoxious to them. They must be systematically willed to exercise by trained supervision, taught how, and made fit for exercise. Many of them are in no condition to embark on a gymnastic spree, even if they possess sufficient will power to begin of their own accord.

No busy physician has the time and few have the equipment or training to supervise this work properly. It demands the service and experience and cooperation of an expert. It is not only necessary to enlist the physiotherapist's aid for those who would not exercise otherwise, but also wise to have their assistance and judgment in guiding those who are willing or could be encouraged to exercise on their own account. Home-made amateur results are rarely satisfactory because the patient either works half heartedly, does not persist and quits, or launches into the new enterprise so boldly and prematurely that actual harm results. A constitution that is already strained must be initiated gently and guardedly, instead of crudely and abruptly. One would not knowingly recommend uncensored exercise to a patient with damaged heart or arteries. Nor should one be careless with the endocrine obese or asthenic.

It is surprising and gratifying to witness the increased stamina and exercise capacity under a carefully graduated regime, and there need be no fear of heart strain if the physiotherapist is watchful and if the physician cooperates in the supervision. It is an immense advantage to have the physiotherapist's workshop and the doctor's office in the same building. This provides opportunity for the physician to watch the patient before, during and after exercise, sweat or shower, as occasion requires. He can satisfy himself as to the pulse rate, heart sounds and blood pressure under working conditions.

In this discussion of constitutional types I do not wish to be understood as ascribing an exclusively endocrine origin to asthenia or obesity. These are complicated conditions for which many factors are responsible. The endocrine organs are participants and are involved, together with the autonomic nervous system and other nonendocrine organs. At present more headway can be made in their treatment by a judicious combination of stimulating glandular therapy, dietary regimes and physiotherapeutic procedures, than by any one of these measures alone.

It is hoped that these remarks will serve to direct more attention to the usefulness of physiotherapy in conjunction with glandular therapy in the treatment of abnormal constitution, and will encourage

others to apply these beneficial methods. Thyroid extract as a tonic is probably more potent and sensible than iron, quinine and strychnine, and if properly used and controlled need not worry physician or patient. Physiotherapy, likewise, if properly applied, is a tonic of excellent worth. The repeated admonitions to beware of thyroid as dangerous, and to beware of exercise in asthenics and obese people, should be reserved for those who do not know how to use either. No agent capable of doing good is harmless, if unwisely used. This applies to surgery as well as to drugs. Only impotent remedies are harmless.

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**Diaphragmatic Hernia.** Carl A. Hedblom, Madison, Wis. (*Journal A. M. A.*, Sept. 26, 1925), analyzes 378 cases of diaphragmatic hernia. Excluding those hernias due to war injuries, 60.1 per cent, were due to trauma; 14.7 per cent., congenital; 14.8 per cent; acquired, and 10.3 per cent, of indeterminate origin. Twenty-two patients were children under 10 years of age. The duration of the symptoms in the traumatic cases was three years or under in about 80 per cent., while in those of congenital and acquired origin it was more than three years in 54 per cent. In a considerable proportion of those of traumatic origin there was a latent period between the injury and the onset of symptoms of hernia, and in a large proportion months or years elapsed before operation. The symptoms and signs in diaphragmatic hernia were variable. All the abdominal organs except those in the pelvis were a part of the hernia content in some cases. The stomach was herniated in 194 cases, the colon in 158, the intestines in fifty-six and the spleen in twenty-four. A sac was noted as present in twenty-four. Of abdominal symptoms, pain, vomiting, constipation and distention were most common; of those referred to the thorax, pain, dyspnea and dysphagia were the most frequent. Tympany and dullness to percussion, heart displacement and splashing and gurgling in the thorax were the most constant physical findings. Not infrequently, the physical finding were very few. Diagnosis was made on clinical or roentgen-ray findings in 59.5 per cent, at operation in 30 per cent and at postmortem examination in 6.3 per cent, and it was uncertain in 4.3 per cent. The diagnosis was made late in the cases eventually recognized. Laparotomy was performed in 40.3 per cent, thoracotomy in about 39.2 per cent, and some combination of laparotomy and thoracotomy in 20.4 per cent. The hernia opening was centrally situated in 22.7 per cent, lateral in 29.4 per cent, posterior in 13.5 per cent, at the esophageal hiatus in 20.2 per cent, and variously situated in the remaining cases. There were seven cases, three in the Mayo Clinic series, of parasternal hernia. The hernia opening was sutured in 72.6 per cent of 362 cases, was reduced but not sutured in 11.8 per cent, could not be reduced in 9.7 per cent, and was found at necropsy in 5.9 per cent. The hernia was successfully repaired in 49.2 per cent of 146 cases subjected to laparotomy and in 89.4 per cent of 142 cases in which the thoracotomy approach was used. Of the nineteen patients operated on at the Mayo Clinic, fifteen recovered from operation; two with congenital absence of the left diaphragm died one and eight years after operation, and one had a recurrence but has been symptom-free since the second operation. Twelve have remained free from symptoms of recurrence. Four, 21 per cent, died, respectively. Of shock, cyanosis, pulmonary embolus and sepsis. Of the total number, 251 patients (66.4 per cent) recovered from operation, but in forty-two of these cases no attempt was made to suture the hernia.

# NORTHWEST MEDICINE

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SIR WILLIAM OSLER\*

July 12, 1847—December 12, 1919

Sir William Osler is one of the immortals. His name will endure throughout the ages, in the front rank of the heroes of medicine. He was the greatest clinician of the century, probably the greatest in history. Born of a family, many of whose members were gifted beyond the ordinary, his achievements are a tribute to the merits of good inheritance. Fortune and environment, too, favored him, for he reached the age of manhood and completed his undergraduate work at the beginning of a period lasting about a quarter of a century which, marking as it did the origin of the transition of healing from an empiric art to a scientific profession, may well be regarded as the golden age of medicine. Pasteur had but just proved biogenesis to be a fact and the application of his discoveries to etiology of disease was in its infancy. The whole field of medicine was fallow. Never had there been such a period. Never again will there be another such unless, perchance, someone, gifted with the prescience of a Pasteur, may unravel the tangled skein of much fiction interwoven with little fact of our knowledge of the endocrine system, which conceivably may open new vistas as full of promise and wealth as was the discovery of the bacterial origin of many diseases. Never were there so many possibilities for the investigator and possessor of vision and imagination. The eyes of the world were upon the microscope and the things it was used to discover and analyze. Lister was applying to surgery the results of Pasteur's discoveries. Koch and others were active in classifying bacteria, and nonmedical scientists were intensely interested in every allied branch of microscopic work.

Osler had been familiar with the instrument from adolescence and, under the guidance of exceptionally enthusiastic teachers, had accumulated a fund of information from it, unusual for one of his age, long before he began the study of medicine. After graduation he went abroad and, on his return to Canada, what might have been anticipated happened. His keenest and greatest interest was in pathology. Here,

inspired by the achievements and personality of the still active and virile Virchow, he embarked on seas almost uncharted, in which he made many excursions from the travelled route. He possessed a vigorous, athletic, though rather small body, and a benign and "imperturbable" disposition, with a gift of humor that furnished an outlet for superabundant spirits, and provided a safety valve from the more serious tasks to which he so assiduously set himself.

The variety of his efforts astounds the reader of his life history. His literary output was prodigious, perhaps greater, and certainly more diversified, than that of any other physician who ever lived. As an example, he wrote his great textbook on "Practice of Medicine" in a year, meanwhile teaching, engaging in consultations and performing a multitude of other tasks. Only a genius, participating as frequently as he did in meetings, both as essayist and in discussion, would have been tolerated as other than boresome. He had the gift of classifying his experiences and of being able to recall them at a given moment, which was supplemented by a rare ability to take notes on every occasion. Thus, the eight hundred or more autopsies which he made while he was a professor in McGill University, were later used by him as the nuclei of scores of papers, and his knowledge of pathology proved a foundation laid not on shifting sands, but on the solid rock of experience with fundamentals. He sought truth at its source, weighing whatever evidence came before him and estimated it, in the main, at its correct value.

Osler's mind was anything but a single track mind. Indeed the branches on which it shunted from time to time from the main track were exceedingly numerous, and invariably led him into intellectual territories of great interest, not only to himself but to those to whom he expounded his views. He was at home not only in the realm of medicine but in that of literature, and combined a most unusual knowledge of scripture, of books and of writers, which stood him in good stead in his own literary creations, for his writings, be it not forgotten, were more than stereotyped and mechanical processes. They are literature, often beautiful in their imagery and the perfection of their rhetoric. Everything he saw was grist for his mill and his "inkpot career" will forever remain a source of astonishment to all who behold it through the medium of his biography.

Harvey Cushing deserves a crown of laurels for his remarkable work in portraying the master mind

\*"The Life of Sir William Osler," by Harvey Cushing.

of his distinguished and adored friend and teacher. "The Life of Sir William Osler" is said to have been in course of preparation for ten years and the vast material it records make it seem that this was none too long a time to achieve so splendid a result. Cushing, in the preface, states that he will let Osler's papers and letters unfold the story and, at least in the first of the two volumes which comprise the work, the personal pronoun "I" as applied to the biographer cannot be found. But Cushing is too modest. It is true enough that many letters and many quotations from Osler are to be found. But if the spaces in between be thought of as interludes, then they are interludes of great length and splendid descriptive power. Here and there they become veritable arias of praise which show the man Osler in his greatness, in his simplicity and in his loveliness. The work progresses with increasing smoothness and interest from chapter to chapter. The author exhibits diversified knowledge of the famous men and manners, and historically correlates the socioeconomic with medical activities of the period of which he writes. Not rarely he rises to literary heights, as in his description, on page 380, of Baltimore when Osler first went there, which is delightfully written in a style that one might more expect to find in an unusually good work of fiction than in a historical or biographical record.

Space limitations prevent doing justice in these columns either to Osler or to Cushing's biography of him which should be read by every physician. If the writer of these inadequate lines had his way, its reading would be compulsory in the education of every medical student. The young man who reads this work will find in it an inspiration which may well help him so to direct his steps that he, too, may live a life of honor and glory, while for him of many years there can come only regret that he has overlooked a multitude of opportunities, such as Osler clearly saw and used, a regret which perhaps would not have been his, had he in his youth had so graphically portrayed for him a life as noble as was Osler's.

#### TOXIN-ANTITOXIN PROPHYLAXIS

During the last few months campaigns for the prevention of diphtheria have been inaugurated in many sections of the country. Health departments are all agreed that the value of toxin-antitoxin as preventive medication has been thoroughly established, and they are, therefore, furthering the campaigns in every way possible, physicians being espe-

cially requested to urge the immunization of preschool children. Statistics show that 80 per cent of children who have diphtheria are under five years of age. Hence it is important that the child is immunized as early as possible after the age of six months. It has been generally observed that severe reactions very rarely follow injections of toxin-antitoxin during the early years of life, although occasionally an adult suffers a violent reaction.

The new formula now on the market, O.I.L. plus toxin-antitoxin mixture, has the same immunizing value as the old formula, and even more rarely does a severe reaction follow its use. Certain individuals, after the ordinary course of three injections, are Shick-positive after six months and so require one or two more injections to gain immunity. A very few cases are on record that have acquired diphtheria after having had a negative Shick reaction. In these cases, where the technic has not been faulty, there has been a history of a very unusual exposure to overwhelming doses of diphtheria.

Experience has shown that toxin-antitoxin does not harm any individual and that it does prevent diphtheria. With this preventive agent in the hands of the profession it is possible to make diphtheria an obsolete disease. To obtain this result, however, it is essential that there be a general adoption of this treatment, so that all children shall be immunized against the disease. The demonstration of prejudice against this procedure is to be anticipated, as such has always existed in the minds of some against every proposed health measure for the protection of the public. Every physician can exert an influence in behalf of this preventive treatment by assuring his patients of its harmless nature and explaining the lasting benefit which will accrue to their children and the community by its adoption.

#### HEALTHY SECTION FOR INFANTS

The low mortality rate for infants in the Pacific Northwest has been a subject of comment for a number of years. Although the fact is well known, it is yet a source of gratification, however frequently it may be brought to one's attention. Inspection of the volume recently issued from the Bureau of Census, entitled Birth, Stillbirth and Infant Mortality Statistics, discloses the fact that the latest record for infant mortality continues to prevail in this section.

Under the heading "deaths in infants under one year of age per 1000 births," statistics are given for the states in the registration area. This shows

for the year 1923 that Oregon, Washington and Nebraska present the same figure of 57, this being the lowest record. Among the cities of 100,000 population or more the lowest death rate of infants under one year of age per 1000 births is assigned to Spokane with a record of 48, this being followed by Seattle with 50 and Portland 53. The Pacific Coast continues the record with San Francisco presenting a record of 58. The continued publication of figures sustaining this low death rate indicates that this is a permanent feature of the states of the Northwest and not a sporadic occurrence.

#### OREGON ANNUAL MEETING

While the annual meeting of the Oregon State Society has generally been held at Portland, it was a pleasing variation this year to meet in the extreme southern part of the state at Medford. This is a delightful section in the fall season, the Rogue river valley being at its best at this time. Although the distance from the leading cities prevented the usual attendance of its members, about one hundred were present at this meeting. They included the members vitally interested in the welfare of the society and devoted to accomplishing the most for its future progress.

The guest of the occasion was Dr. Hamann, of Cleveland, one of the outstanding surgeons and anatomists of the day. It was a pleasure to listen to the conservative, scientific opinions which he presented. In his addresses he made special comment on the abuse of certain surgical procedures, involving needless and harmful operations. He said evidence of an able surgeon is often presented by one who declines to operate, rather than he who performs an operation most readily and willingly. The papers presented by members of the society displayed results of thorough study and wide experience on the part of their authors.

The most prominent individual, and the one who received the most attention of the members, was the beloved president, Dr. A. C. Kinney, serving his second term after a lapse of fifty years since his first presidency. Still vigorous and capable of doing his part in the duties of the day, he is an illustration of the fact that advancing years are no indication of incapacity for work nor the maintenance of mental vigor. The society honored itself, as well as Dr. Kinney, in the celebration of its fifty years of existence by having him serve a second term as president.

A spirit of optimism was apparent in the future outlook for the society. Although the recent in-

crease in dues has caused a marked decrease in its membership, the financial reports and predictions for the future indicate a steady increase in members and confidence in future expansion. The election as secretary of Dr. Stricker, secretary of the State Board of Health, was considered a prediction for successful development of public health work by the cooperation of these two organizations and the Public Health League, whose executive secretary occupies the same position in the State Society.

#### A LIVE MEDICAL MEETING

The opinion seems to have prevailed among many members of the profession during recent years, that the state medical association was destined to decline in consequence of the preeminence of the Pacific Northwest Medical Association in medical matters of the Northwest. The state meetings which have been held this fall seem to indicate there is no ground for anxiety on this score. The meeting of the Washington Association in Seattle last month was considered by some to be the best in its history. Unquestionably it compared favorably with any assemblies of former years. This was indicated by the large attendance from all parts of the state and the registration of about 280, nearly all from cities other than Seattle. For the first time at a meeting held in Seattle accommodations were available for adequate housing under one roof of the guests attending the meeting and all of its activities in the new Olympic Hotel. The appreciation of these pleasing surroundings were attested by all visitors.

The program was well selected and of a sufficiently attractive character to hold large audiences to the reading of the last paper. Dr. Henry Christian, of Boston, is always a welcome visitor to these state meetings, both by his charming personality and the message told in all of his addresses. He is one of the outstanding figures before the medical profession of this country. He always offers something new which provides ground for subsequent profitable meditation. While Dr. I. M. Jones, of Los Angeles, is a new-comer to these meetings, he proved himself a valuable acquisition as well by his personal characteristics as the novel message presented. The subject of deafness is not one ordinarily to arouse enthusiasm, but the exhibition of his electric cabinet offered something entirely new to all listeners. By this mechanism Dr. Jones demonstrated that the location in the ear of the pathology of deafness can be accurately determined, and a definite prognosis established as to permanent deafness or the possibility of relief by treatment.

Dr. John Lundy, of the Mayo Clinic, was among his friends. He left a practice in Seattle to become at Rochester the head of the department of anesthesia. During the past year he has made good in this specialty, and has become an authority in the practice of local anesthesia. His address on this subject was a source of profit and pleasure to his many old friends.

The golf enthusiasts were given the day before the meeting for a demonstration of their respective qualifications in this world-wide game. It seems not to have been definitely determined who were the real champions, but the list of near-champions was greatly increased and it was proven that there is no decline in the popularity of this all-embracing sport. The social entertainments at the Olympic, as well as the individual affairs, afforded pleasure to all in attendance and served not only to cement friendships already formed but, also to bring into closer relations the newer members among the profession of the state.

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#### MEETING OF IDAHO STATE ASSOCIATION

The thirty-third annual session of the Idaho State Medical Association set a high mark. The physicians of Idaho are more widely separated than in most of the other states. There are a little over four hundred physicians in the state and no city of more than twenty-five thousand population. There are many very fertile irrigated sections, separated from other similar sections by mountains, and areas as yet undeveloped and covered by sage brush. Under such conditions some physicians must work with a minimum of contact with others in the profession. These conditions tend to make it difficult to maintain a strong state association, but a program such as that of September 3-5 would be a credit to any state. All in attendance were interested, and there was much unostentatious good-fellowship.

Idaho physicians seem rather too modest about their attainments, as well as the beauties and resources of their state. The men responsible for the last meeting earned the gratitude of their other fellow practitioners. The program was entertaining and instructive, and was an inspiration to all who were fortunate enough to be present. Meetings of this kind also demonstrate the unselfish devotion to high professional ideals of the faculties of our educational institutions. Men from these institutions seem always ready to travel long dis-

tances to give the results of their study and research to those, whose privilege it is to give the people, even in isolated places, the benefits of modern science. This attitude of the teachers speaks well for the future of American medicine. They usually lay stress on the methods of diagnosis and treatment that do not require elaborate equipment, and make their auditors feel it is only the exceptional case that needs more apparatus than is accessible to the average physician.

Much of our modern equipment is mainly for research and teaching purposes and is not essential to efficient diagnosis and treatment. Practitioners are beginning to realize that there are two ways of studying medicine, by experiment and observation. Most men must content themselves with the latter, although there are notable examples of men being in isolated communities who have done effectual experimental work. Sir James MacKenzie again and again pointed out the superior opportunities of the general practitioner for observation of patients over long periods of time, and emphasized the importance of frequent notes on the changes in physical findings and symptoms that take place year after year. Naturalists have contributed much to the world's knowledge by simple observation, and it might be well for the future of medicine, if more physicians, both in the large centers and in isolated places, would content themselves with this method without the use of empirical therapy that often serves to obscure and confuse. The naturalist physician, however, must beware of his own theories and hobbies on the one hand, and some of the dazzling results of the experimenter on the other.

There is some danger in too many programs furnished entirely by those from abroad. Local men may maintain only a receptive attitude. However, if they take home the inspiration, and observe and study the papers and discussions in county societies, the benefits must be far-reaching. May the Idaho State Association have more such meetings as the one at Pocatello.



## MEDICAL NOTES

**Postgraduate Scholarships.** Scholarships on the Oliver-Rea foundation for graduate study in Medicine are available at the New York Postgraduate Medical School and Hospital. Inquiries should be addressed to the Dean, 301 East Twentieth Street, New York City.

**Charter Members.** Through an error the list of charter members of the Pacific Northwest Orthopedic Association, which appeared in last month's issue, was incomplete. Following is the complete list of the charter members to that organization which was formed in Portland, June 29; Drs. O. F. Akin, Portland; Roger Anderson, Seattle; S. C. Baldwin, Salt Lake City; J. C. Brugman, Seattle; E. C. Carlson, Portland; Richard Dillehunt, Portland; C. F. Eikenbary, Spokane; R. L. Jeffrey, Seattle; Mitchell Langworthy; Spokane; M. C. Lile, Seattle; C. R. McClure, Portland; F. C. McTavish, Vancouver, B. C.; D. A. Murray, Seattle; L. N. Ossman, Salt Lake City; F. P. Patterson, Vancouver, B. C.; E. A. Rich, Tacoma; H. J. Wyckoff, Seattle.

### OREGON

**Doctors Licensed.** At the recent meeting of the state medical examining board the following physicians obtained licenses in this state: L. R. Tabor, H. Axley, F. E. Fowler, R. S. Welsh, H. A. Gueffroy, G. B. Dewees, E. C. Clark, B. E. Penden, J. F. LeCocq, H. S. Magee, D. J. Lawson, R. Allen, W. W. Gilbert, J. J. Frahm, H. R. Shields, H. G. Hebard, L. H. Schatz, S. S. Bozorth, J. L. Sears, F. N. Miller, R. E. Fisher, A. H. Johnson, W. W. Baum, K. G. Burchardi, P. Bailey, W. T. Rogers, R. S. Waltz, E. D. Dubois, E. F. Banks, K. M. Stieglitz, J. B. McCarthy, R. Adkisson, C. M. Canning, E. F. Lucas, S. E. Rees, M. Mumby, H. Averill, K. P. Lancefield, B. J. Hanley, I. D. Williams, S. A. Kleger, F. H. Douglas.

**New Hospital to be Erected.** A new hospital is to be built in Astoria by the Catholic Sisters of Charity of St. Mary's hospital, a block of land having been purchased for this purpose overlooking the city. It will contain one hundred and twenty-five rooms with all the auxiliaries of a modern institution. It will be four stories in height, built in the form of a cross, at an estimated cost of \$400,000.

**Will Donate Land for Hospital.** Three acres of land, at Springfield, has been offered for hospital purposes by the Eugene Chemical Works. The manager says that this land will be given to any group of people who will erect a first-class hospital and maintain reasonable fees. This section seems to be in need of such a hospital.

**Appointed Physician to College.** Dr. J. H. Fairchild, of Salem, has moved to Clairmont, Calif., where he has been appointed school physician and head of the health department of Pomona College.

**Dr. Fred Thompson,** of The Dalles, who has spent several months in study and travel in Europe, has returned home.

**Dr. Ralph G. Matson,** of Portland, has returned home after spending two years abroad. He spent most of his time in Vienna, conducting special studies pertaining to tuberculosis.

**Dr. Albert Haberer,** who has recently practiced at St. Louis, Mo., has located for practice at Klamath Falls.

**Dr. L. M. Spalding,** eye, ear, nose and throat specialist, recently of Pendleton, has located for practice at Astoria.

**Dr. G. B. Smith,** who has practiced for some time at The Dalles, has located at Woodburn.

**Dr. S. A. Kleger,** recently of Minneapolis, has located at Astoria, where he will specialize in eye, ear, nose and throat work.

**Dr. George Smith,** recently of Kellogg, Ida., has located for practice at Pilot Lake.

**Dr. O. E. Patterson,** who has resided for some time at Joseph, has located for practice at Vale.

**Medical Wedding.** Dr. G. F. A. Walker of Portland married Miss Flora Mae Ross of that city, September 10.

### WASHINGTON

**Addition to Hospital.** Plans are announced for the construction of a new central dining room and dormitory for the Western State hospital at Steilacoom. It will be of brick and concrete construction, three stories in height and will accommodate about six hundred and fifty patients in the dining hall and one hundred and twenty in the dormitory. The cost will be about \$125,000.

**Addition to Sanitarium.** The Aldercrest Tuberculosis Sanitarium, of Snohomish county, is to be enlarged by the construction of a twenty-five foot addition to each of the wings of the present building. This will provide accommodation for twenty more beds at a cost of \$20,000.

**New Hospital Established.** At Pateros a hospital has been opened to be known as Pateros General Hospital. It is established on the second floor of a bank building. It will supply a need in that section of the country.

**Hospital Closed.** The hospital at Clear Lake, which has been under the direction of Dr. L. H. Meadows, has been closed in consequence of shutting down of the Clear Lake Lumber Company. It will be closed indefinitely, until the situation of the company warrants its reopening.

**Hospital Site Purchased.** A site has been purchased at Lake Ballinger, on the boundary of Snohomish and King counties, for the Convalescent Hospital for Crippled Children, which will be established under the auspices of the Elks. The first unit will take care of fifty cases. This will probably be completed during the coming year.

**Sale of Hot Springs.** The well known Sol Duc Hot Springs, near Port Angeles, has been sold to a syndicate which proposes to develop this as a health and vacation playground. Several years ago the hotel and cottages at the springs were destroyed by fire.

**Dr. Harry V. Wurdemann**, of Seattle, Lt. Col. Medical Reserve Corps, U. S. Army, has been elected for the third time President of the Reserve Officers' Association of the State of Washington.

**Dr. D. M. Strang**, who has practiced for some time at Mt. Vernon, has located for practice at Wenatchee.

**Medical Weddings.** Dr. Donald Black, of Port Angeles, was married to Miss Sophie Hartwich of that city at Seattle, Sept. 8. Dr. Millard Nelson and Miss Grace Bonner, of Tacoma, were married at Olympia Aug. 21.

#### IDAHO

**New Hospital to be Built.** A new hospital is to be constructed at Nampa, the Nazarene sanitarium, at a cost of about \$100,000. It will be 44 by 126 feet, three stories in height, with a wing 24 by 41 feet. It will be brick and concrete construction. It will be an up-to-date, fireproof building with the usual provisions for hospital equipment. It will have a capacity for forty-five beds.

**Dr. F. E. Barrett**, who has recently been located at Vale, has moved to Boise, where he will practice for the future.

**Medical Weddings.** Dr. J. R. Numbers, Jr., of Boise, was married to Miss Amy Palmer, of Nampa, Aug. 20. Dr. V. C. Belknap, of Nampa, was married to Mrs. Anna Spencer, of Heppter, Ore., Sept. 16.

#### OBITUARIES

**Dr. H. S. Garfield** of Pendleton, Ore., died Sept. 17, aged 65. Last winter he suffered an attack of influenza, from which he had not fully recovered. His death was due to cardiac disease. He was born at Olympia, Wash., where he received his early education. For several years he worked as a railroad surveyor, later studying medicine at San Francisco and Chicago. He began practice at La Grande but moved to Pendleton thirty years ago, where he practiced until his death. He took a prominent part in politics of his county and also served as coroner.

**Dr. Joseph E. O'Brien**, of Butte, Mont., died Aug. 21 of cancer of the larynx, aged 31 years. He was born in Marysville, Mont., in 1893. He obtained his B. A. degree at St. Francis Xavier college in Nova Scotia. He graduated in medicine at Johns Hopkins University. During his student days he was a successful athlete. He located for practice in Butte in 1921.

**Dr. Charles B. Cowan**, of Seattle, Wash., died Aug. 23 of disease of the heart, aged 47 years. He was born at London, Ont., and obtained his medical degree from Weston Medical College of that city. He located for practice in Seattle in 1900. During the world war he served as lieutenant in the medical corps, being situated at the Presidio, San Francisco..

**Dr. Frank P. Nourse**, of Lewiston, Ida., died Aug. 30 from septicemia. He was born in Hartland, Wis., in 1852. He located at Lewiston in 1903. He had a wide acquaintance and was prominent in many lines of activities.

## REPORTS OF SOCIETY MEETINGS

### OREGON STATE MEDICAL SOCIETY

MINUTES OF THE FIFTY-FIRST ANNUAL MEETING OF OREGON STATE MEDICAL SOCIETY, HELD AT ELKS CLUB, MEDFORD, ORE., SEPT. 2-4, 1925.

#### HOUSE OF DELEGATES

WEDNESDAY, SEPT. 2

In the absence of Dr. A. C. Kinney, President, and Dr. Ralph A. Fenton, 1st Vice-president, the meeting was called to order by Dr. Lee Bouvy, 2nd Vice-president, at 11:30 a. m.

Inasmuch as the Secretary's report of the last year's meeting was published in full in Northwest Medicine, motion was carried that its reading be dispensed with.

The roll call disclosed the following officers and delegates present: Paul Rockey, Lee Bouvy, Geo. E. Dix, C. L. Booth, Jos. A. Pettit, W. B. Morse, C. E. Sears, E. B. McDaniel, Otis B. Wight, Roy S. Stearns, Hugh S. Mount, C. J. Smith, Wm. Kuykendall; W. B. Neal, delegate from Central Willamette and Lane County Societies; R. J. Pilkington, delegate from Clatsop County Society; R. J. Conroy, delegate from Jackson County Society; and the following delegates from Portland City and County Society: T. Homer Coffen, J. Earl Else, Wilson Johnston, Wm. Knox, A. W. Moore and Calvin S. White.

The Secretary's report for 1924-25 was then called for and read in full. On motion it was referred to the Board of Councilors for their report. This, with other reports, follows:

Motion carried that the Committee on Credentials be appointed in order to seat the delegates. The Committee appointed consisted of Drs. C. M. Barbee, Chairman, H. J. Clements, W. B. Morse.

Dr. Ralph Walker, the treasurer, being absent, his report was read by the secretary, Dr. C. L. Booth. This report was referred to an auditing committee which was then appointed, consisting of, Drs. Otis B. Wight, Chairman, R. B. Dillehunt, C. E. Sears.

The following committees were then appointed: Committee on Nominations: Drs. Wilson Johnston, Chairman, Hugh S. Mount, W. P. McAdory.

Committee on Memorials: Drs. C. J. Smith, Chairman, Wm. Kuykendall, Wm. W. P. Holt.

Committee on Resolutions: Drs. Calvin S. White, Chairman, J. Earl Else, E. A. Pierce.

Some discussion took place as to whether or not committee members must be members of the House of Delegates and the secretary stated that, in his opinion, any member of the Society in good standing could be appointed on a committee. Motion was then regularly made, seconded and carried that the committees, as suggested by the presiding officer, Dr. Bouvy, be made the committees of the House.

Dr. Paul Rockey was called on for a report of the work of the Council. He stated that no formal report had been prepared, as he had only been acting as chairman of the Council since Dr. Fenton's absence, and as he thought the work of the Council was fully covered in the various reports presented.

The standing committees were then called on for reports as follows:

Dr. C. L. Booth, chairman of the Scientific Work and Program Committee, stated he had nothing to say, but hoped the program would speak for itself.

Dr. F. D. Stricker, chairman of the Public Health and Disease Prevention Committee, asked that his report be postponed until the next business session.

Dr. E. A. Sommer, chairman of the Committee on Public Policy and Legislation, stated that he would give a full report later. He made a brief talk regarding the history of the Medical Practice Act which was introduced at the last session of the legislature and brought out the point that, if the medical profession as a whole had stood by their legislative committee, the bill undoubtedly would have passed.

The written report of Dr. Otis B. Wight, chairman of the Committee on Local Publications, was read by the secretary and placed on file.

Dr. W. B. Holden, chairman of the Committee on Hospital Betterment, stated that a written report would be made later.

Dr. J. J. Emmens, chairman of the Committee on Arrangements, announced that a tea would be given at the residence of Dr. Conroy for the wives of the visiting members.

The written report of Dr. S. E. Josephi, chairman of the Committee on Medical Education, was read by the secretary and placed on file.

Dr. Wilson Johnston, chairman of the Medico-Legal Defense Committee, read his report, which was placed on file.

Dr. E. F. Tucker, chairman of the Cancer Control Committee, was not present and no report was had.

Dr. C. J. Smith, chairman of the Committee on State Industrial Affairs, read his report, which was placed on file.

The report of the Board of Journal Trustees was read by Dr. C. J. Smith, chairman, and placed on file.

Dr. H. M. Greene, chairman of the Military Committee, was not present and no report was had.

As the hour was getting late, the Councillors' reports and reports of special committees were put off until the next business session.

Dr. Calvin S. White moved that all of Chapter XIII of the By-Laws be repealed. Motion was seconded by Dr. Wm. Knox. This chapter reads as follows:

#### CHAPTER XIII—EXECUTIVE SECRETARY

Section 1. The proper officers of this Society are hereby authorized and directed to remit as rapidly as available to the duly elected Treasurer, who shall be properly bonded, of the Oregon Public Health League, a sum of money not to exceed ten dollars per member per year; but in no instance shall a sum be remitted greater than fifty per cent of the amount received from each member during the year.

Section 2. In consideration of the sum or sums of money set aside for the Oregon Public Health League, as provided for in Section 1 of this Chapter, the Executive Secretary of the League shall be required to perform the work of an executive secretary of the Oregon State Medical Society under the direction of the Council of this Society.

Meeting adjourned at 12:30.

THURSDAY MORNING, SEPT. 3

Meeting was called to order by Dr. Bouvy at 8:45 a. m.

The roll call disclosed the following officers and delegates present: Paul Rockey, Lee Bouvy, Geo. E. Dix, C. L. Booth, Jos. A. Pettit, W. B. Morse, C. E. Sears, E. B. McDaniel, Otis B. Wight, Roy S. Stearns, Hugh S. Mount, C. J. Smith, Wm. Kuykendall; W. B. Neal, delegate from Central Willamette and Lane County Societies; R. J. Pilkington, delegate from Clatsop County Society; W. P. McAdory, delegate from Eastern Oregon Society; and the following delegates from the Portland City and County Society: J. Earl Else, Wilson Johnston, Wm. Knox, A. W. Moore and Calvin S. White.

Minutes of the Wednesday morning meeting read and approved.

Dr. C. J. Smith, chairman of the Committee on Memorials, read his report. Dr. Smith stated that 18 members of the medical profession had died during the past year and were all included in the list, even though some of them had not been members of the State Society at the time of their death. Motion made and carried that the resolution be accepted, and that it be read again at the general meeting on Friday, when special time would be set aside for remarks.

As chairman of the Resolutions Committee, which functioned until this meeting, Dr. C. J. Smith, read a resolution which had been prepared by the American Medical Association and represented the outcome of a meeting of the officers of the State Medical Society with the United States senators and representatives from Oregon. Referring to the resolution, Dr. Wilson Johnston said he thought physicians should be allowed to deduct the cost of postgraduate work from their income tax reports and that it was unjust discrimination against the physicians not to allow them to do so. On motion the resolution was referred to the Committee on Resolutions, of which Dr. Calvin S. White is chairman, for further report at the Friday morning session.

The report of Dr. W. B. Holden, chairman of the Committee on Hospital Betterment, was read and placed on file.

Dr. C. J. Smith, chairman of the Committee on Honorary Membership, submitted the following names as having been approved by the Council: Drs. Alfred C. Kinney, Mae H. Cardwell, A. W. Moore, J. S. Moore, A. E. Rockey, G. M. Wells, C. H. Wheeler.

Motion carried that the report be accepted and members as listed be elected to honorary membership in the Oregon State Medical Society.

Dr. F. D. Stricker, chairman of the Committee on Public Health and Disease Prevention, read his report which was accepted and placed on file.

Dr. H. M. Greene, chairman of the Military Committee, read his report which was accepted and placed on file.

The report of a special committee, consisting of Drs. C. J. McCusker, chairman, Calvin S. White and Karl P. Moran, was read by the secretary. This

committee was appointed to decide upon the amount of dues for associate members; also decide whether or not associate members should be entitled to medical defense and to receive Northwest Medicine. Dr. Clements said there were a number of physicians in the Polk-Yamhill-Marion County Society who were working on a salary for the state and asked if some provision could not be made for them so they would not have to pay the State dues of \$20. Dr. White said the committee had taken that matter into consideration, when preparing the report and decided that the income of a physician working for the state and receiving \$150 was equivalent to or more than an income of \$300 in private practice. On motion the report was referred back to the committee, as it did not seem to cover all the ground and made no mention of medical defense or Northwest Medicine.

Dr. Otis B. Wight read the report of the Auditing Committee, which was accepted and placed on file. The report stated that the committee had examined the statements, as published in the League Bulletin, which appeared to be correct, but recommended a more thorough audit of all the treasurer's books; also examination of the bonds which are held in a safe deposit box. Motion made and carried that this recommendation be accepted and that the auditing committee report to the Board of Councillors at their first session after the annual meeting.

The reports of Councillors with regard to the districts which had been assigned were then heard.

Dr. Wight's written report was read by the secretary and placed on file.

Dr. Hugh S. Mount, not being present, the secretary read a letter from Dr. Wallace, regarding conditions in Clackamas County. Dr. Booth reported the meeting held at Hillsboro with the Washington County doctors, and that the doctors there had expressed the wish to affiliate with the Portland City and County Medical Society.

Dr. W. B. Morse was not present and no report was had regarding his district.

Dr. Wm. Kuykendall read his report which was placed on file.

Dr. C. J. Smith read his report which was placed on file.

Dr. Roy S. Stearns had no written report ready, but reported that his district was very active and a majority of the physicians members of the Society. His written report will be handed in later.

Dr. E. B. McDaniel reported that the only way his district could be covered would be by personal solicitation and, as the territory was so large, he could make no suggestions as to how it could be covered, as, in his opinion, it would take at least thirty days to personally visit the physicians.

Dr. Roy McDaniel was not present and no report was had regarding his district.

Dr. Calvin S. White, who had made a motion Wednesday morning that all of Chapter XIII of the By-Laws, be repealed, rose to say that his motion had lain upon the table for one day, and that he wished it put to a vote. As he had not submitted the amendment in writing or read it the day before, he was

asked to read the chapter in question. After reading it, Dr. White said there is a feeling of resentment among the members against paying what they think are excessive dues and turning them over to the Oregon Public Health League. He said that there were almost twice as many names listed in the program as were registered at the meeting and that the delegates did not attend on account of being dissatisfied with the way the League is handled. Dr. White said he had just returned from a meeting in Eastern Oregon, at which the attendance was very small and almost without exception the people were condemning the Oregon Public Health League. Dr. White said he was perfectly willing that the dues remain at \$20. or even be raised, but he thought all the money should be retained by the State Society, that they should employ a full-time secretary, and that they should occupy offices entirely separate from the League.

Dr. Paul Rockey said he had been a member of the Council and the House of Delegates for thirteen years and that there was no one more deeply interested in the problems of the Society than he. He called attention to the fact that the program of the Oregon Public Health League is included in the program of the Oregon State Medical Society and said that the Oregon State Medical Society is supporting two organizations, one of them the State Society and one of them the Health League. He said that, in order to be a member of the State Society and the A. M. A., a person is forced to contribute \$10 to the Health League and that, in his opinion, if the matter were taken up with the A. M. A., it would not be upheld. He said, "Assuming that the Health League could accomplish all that its most ardent supporters think it could accomplish, this is not the way to go about it. I believe such an organization should be kept separate. If you finance it by force from the State Society, then you want the State Society to control it."

As Drs. White and Rockey both wished to put the motion to a vote, Dr. Kuykendall rose to say he thought the vote would be out of order and read the last chapter of the By-Laws to support his statement. This chapter reads as follows:

"These By-Laws may be amended at any annual session by a three-fourths vote of all the delegates present at the session, provided each component society is represented and after the amendment has lain upon the table for one day."

Dr. Kuykendall said: "This proposed action is an amendment to the By-Laws. There is, therefore, the necessity that this shall lie on the table for one day, and another that there shall be a representative of each of the component societies present and voting. As all of the component societies do not have a representative present, the question is out of order and should be so held by the president."

Dr. White said: "There is a world of difference between a repeal and an amendment. This is not an amendment I am proposing. It is simply a motion to repeal something. It does not require a representative of each component society to be present in

order to vote on this motion any more than to vote on the election of officers."

Dr. C. J. Smith said: "I do not care to argue the merits or demerits of this question. You all know where I stand. Dr. Kuykendall is absolutely correct. Would you go down to the legislature and try to repeal a statute of the state in such a manner? They would laugh at you. You must present it in the regular form. In order to repeal or amend in any way you must comply with all rules. Therefore, Mr. President, we ask that your ruling on the subject be made as being out of order."

Dr. Bouvy said: "The By-Laws are very plain and I rule the question out of order."

Dr. Else made a motion that the whole matter be indefinitely postponed. The motion was seconded and brought to a standing vote. Thirteen stood in favor of indefinitely postponing the matter and six stood to oppose the motion. The president declared the whole matter indefinitely postponed.

Dr. Barbee, chairman of the credentials committee, made his report as follows, stating that the delegates as named by the committee were present, had paid their dues, and been duly elected delegates by their society, or substituted by the credentials committee.

Baker County.....	T. J. Higgins
Central Oregon.....	J. H. Besson
Central Willamette....	(W. B. Neal) J. H. Robnett
Clatsop County.....	R. J. Pilkington
Coos and Curry County.....	L. G. Johnson
Eastern Oregon.....	W. P. McAdory
Jackson County.....	R. J. Conroy
Klamath and Lake County.....	T. M. Carstens
Lane County.....	C. E. Hunt
Mid-Columbia Society.....	W. N. Morse
Polk-Yamhill-Marion.....	J. H. Garnjobst
Southern Oregon.....	E. B. Pickel

Portland City and County Society: J. Earl Else, Wilson Johnston, T. Homer Coffen, Wm. Knox, A. W. Moore, C. S. White, Otis Akin, R. C. Coffey, H. M. Greene, E. A. Pierce, J. A. Stewart, John Fitzgibbons, Luther Nelson.

Nothing further coming before the meeting, adjournment was in order. A short recess was called before the scientific session was taken up.

#### FRIDAY MORNING, SEPT. 4

Meeting called to order by Dr. Bouvy at 8:30 a. m.

The roll call disclosed the following officers and delegates present: Paul Rockey, Lee Bouvy, Geo. E. Dix, C. L. Booth, Jos. A. Pettit, W. B. Morse, E. B. McDaniel, Roy S. Stearns, Hugh S. Mount, C. J. Smith, Wm. Kuykendall; W. B. Neal, delegate from Central Willamette and Lane County Societies; J. H. Robnett, delegate from Central Willamette Society; R. J. Pilkington, delegate from Clatsop County Society; W. P. McAdory, delegate from Eastern Oregon Society; R. J. Conroy, delegate from Jackson County Society; C. E. Hunt, delegate from Lane County Society; J. H. Garnjobst, delegate from Polk-Yamhill-Marion County Society; and the following delegates from Portland City and County Society: J. Earl Else, Wilson Johnston, A. W. Moore, Luther Nelson, C. E. Sears, and Calvin S. White. Motion carried that J. H. Rosenberg of Prineville be seated as a delegate from the Central Oregon Society.

Dr. Wilson Johnston, chairman of the Committee on Nominations, read his report which is as follows:

"To the House of Delegates of the Oregon State Medical Society:

Your committee on nominations submit the following nominations:

President Elect.....	W. B. Morse, Salem
1st Vice-President.....	W. W. P. Holt, Medford
2nd Vice-President.....	W. L. Hunt, Klamath Falls
3rd Vice-President.....	J. H. Robnett, Albany
Treasurer.....	J. Earl Else, Portland
Secretary.....	F. D. Stricker
Delegate to the A. M. A.....	Wm. Kuykendall, Eugene
Alternate.....	E. B. McDaniel, Portland

Councillors for three year terms:

Lee Bouvy.....	La Grande
C. L. Booth.....	Portland
C. E. Sears.....	Portland

(Signed) WILSON JOHNSTON, Chairman  
W. P. McADORY,  
HUGH S. MOUNT.

On motion the report was adopted as read.

Dr. Booth read the following amendment to the constitution and made a motion that it lie on the table for one year:

On page 1, line 22 of the Constitution, after the word "interests" insert the following clause: "to maintain a plan of mutual or cooperative defense of its members from unjust malpractice suits."

Dr. Barbee: "I believe it would be wise to strike out the word 'unjust.' A malpractice suit, whether just or unjust, could be covered by the simple phrase malpractice suit."

Dr. Booth: "This question came up a year ago. Dr. Williamson, in his criticism of the proposed change, questioned the advisability of putting in this clause at all but he thought, if it was put in, the word 'unjust' should be shown."

Dr. Johnston thought that the word "unjust" could be left out because, after all, the defense committee are the ones to decide whether the members are entitled to defense.

Dr. Barbee: "It carries with it the idea of the defended being guilty already. That is my only objection."

Dr. Booth was requested to read the clause again with the word "unjust" left out, which he did. He also remarked that the Society is not supposed or obliged to defend unjust cases and that he thought the clause would carry much more weight with this word left in. He said that Dr. Williamson was very positive in thinking this word should be included.

Dr. Barbee then made a motion that the matter be not finally decided at the present time as the amendment would lie on the table for one year and there would be plenty of time to talk it over in the meantime. Motion carried unanimously.

Later Mr. Ward suggested to the secretary that, if they didn't like the word "unjust," the clause might be modified to read as follows: "to maintain a plan of mutual or cooperative defense of its members from malpractice suits where no malpractice exists."

A short recess of the House of Delegates was then

declared and the meeting taken up again at 9:00 o'clock.

Dr. McCusker, chairman of the Committee on Associate membership, made an oral report as follows:

"This committee met and decided that all physicians who are in public health service, such as the State Board of Health, or men who are engaged in state work, such as tuberculosis hospitals, state asylums, etc., or men teaching in the medical schools of the state, be carried as associate members, that they receive no benefit from the defense fund and otherwise that the dues be the same as the regular members, which would make their annual dues \$17. Of this amount \$2.00 would pay their subscription to Northwest Medicine."

Dr. Sommer: "Does that include a man who is a clinical worker, connected with a school who has no chance for a malpractice suit?"

Dr. McCusker: "Yes, those men may be carried as associate members."

Motion carried that the committee report be adopted.

Dr. Calvin S. White, chairman of the Committee on Resolutions, was then called on for his report. He stated that he was not sure who comprised this committee and that they had not been able to do anything on the report that was submitted to them regarding the income tax and the Harrison Narcotic Act. He asked if the resolution could not be submitted to the Council at their first meeting, after which it would be forwarded to our representatives as of the action of this Society.

Dr. Smith suggested that this matter be taken care of as soon as possible, as they had been told that the report should be in with the exact phraseology wanted by the first of October.

After a little discussion, Dr. Else moved that the committee draft suitable resolutions to be approved by the Council and then forwarded to the legislators as an act of the Society.

Motion seconded and carried unanimously.

Dr. Calvin S. White made a motion that a resolution be adopted, expressing our appreciation of the Jackson County Society's kindness in entertaining the Oregon State Medical Society; also that a vote of thanks be given the Elks of Medford for the use of their building and assembly rooms. Motion seconded and carried unanimously.

Dr. Sommer read a letter from the California Oregon Power Company, in which they asked that the Society endorse the Shaefer method of manual resuscitation from electric shock and recommended adherence to its use by member physicians. On motion the matter was referred to the Council for action.

Dr. Mount: "I wonder what is being done about the proposed Sky Line Boulevard. It seems to me it would be a bad idea to put this down the state of Oregon to ruin the water shed on the west side of the Cascade range. I move that this be called to the attention of the State Board of Health or the Council, and that it be taken up with Congress."

Dr. Smith: "I think that is a good idea. This state prides itself on its pure water supply. I think Dr. Mount's opposition is well taken and some action

should be taken. I second the motion." Motion carried unanimously.

Dr. White: "I make a motion that the secretary be instructed to send a copy of this resolution to the State Highway Commission, the Fish & Game Commission, and the U. S. Forest Service." Motion seconded and carried unanimously.

The secretary then read the written report of Dr. Stearns, regarding his district which is composed of Lake, Josephine, Jackson and Klamath Counties. Report adopted and placed on file.

The House of Delegates then adjourned and the general session was called to order at 9:10 a. m.

#### GENERAL SESSION

On motion, reading of the minutes of the House of Delegates was dispensed with.

The election of officers was the next order of business, and the report of the nominating committee was again read. Dr. Smith made a motion that the rules be suspended and the secretary be instructed to cast the unanimous vote for the entire ticket named by the Committee on Nominations. Motion was seconded. All those in favor of the motion were asked to stand and the entire assembly rose. The motion was, therefore, carried unanimously, and the officers for the ensuing year will be those named in the report of the Committee on Nominations. The councillors named are elected for a term of three years, and their terms will, therefore, expire in 1928.

Dr. W. B. Morse, the new president-elect, was escorted to the chair and called on for a few remarks. He said in part: "As I understand it, I am on a year's probation and I was told I would have to live a very exemplary life for the next two years. I did not expect this thing to happen; did not suppose that this body of men considered me capable of such a position. I will do the best I can to live up to the reputation that I think a man should have, occupying such a place, and I hope that in the next two years nobody will be sorry for what they have done today." The doctor's remarks were enthusiastically received and applauded.

Dr. White then made a motion that a committee of two be appointed to escort the incoming president, Dr. Paul Rockey, to the chair. On motion, Drs. White and Sears were appointed. Dr. Rockey addressed the assembly, saying (with reference to the applause which greeted him): "Thank you very much. I am really most appreciative of the honor of being president of this Society and I thank you again for electing me president-elect last year. I should like to take this occasion to offer my own congratulations to Dr. Kinney on the remarkable occasion of his completing a second term in this office after half a century and I know that in offering my congratulations I offer those of the Society. I shall not take up your time in saying anything, except to remind you that my wishes for this Society for its good are as earnest as anyone's could be. There has been a difference of opinion about policy. I hope, when all that is fully understood and worked out, that it will turn out there will not be any difference of opinion among any of us. This

Society is the official Society of the medical profession in this state. I hope everybody, every member of this Society, during this year will feel that it is his Society and take matters of the organization up with the Society through the local society or directly, and I bespeak the cooperation and help of all the members."

On motion of Dr. Bettman, a rising vote of thanks was given the outgoing officers for the efficient manner in which they had handled the work of the organization during the past year.

#### Committee on Memorials

The president then announced that fifteen minutes would be set aside for the reading of the resolution prepared by the Committee on Memorials and any remarks to be made. Dr. Smith, as chairman, read the same report in the general meeting that had been read to the House of Delegates at the Thursday morning session. This report is as follows:

Resolution passed by the Oregon State Medical Society at its meeting in Medford, Ore., September 2-4, 1925.

#### Resolution

Whereas, The medical profession, by its traditions and ethics, cannot expect its achievements and works to be fully exemplified by monument and printed record, and

Whereas, The members of our professions, a list of which is herewith attached, have been zealous during their lifetimes, most of whom preferred their professional duties to that of any other vocation, and

Whereas, The medical profession of the state of Oregon is second to none in the United States or the world in point of value and service to mankind, therefore, be it

Resolved, That our profession go on record with the friends and relatives of their fellow members (who have assisted in preserving thousands of homes unbroken and at last must yield to the grim foe, death) as feeling keenly the loss of these members, and be it further

Resolved, That copies of this resolution, with a list of the membership attached, be furnished the families of each of the deceased.

Drs. Frank H. Campbell, Oscar DeVaul, Michael A. Flinn, W. C. Hawk, Alonzo W. Hill, Ivan Keith, Charles B. King, J. L. Loomis, John C. Mack, Joseph I. Mershon, Bryon E. Miller, John S. Parsons, Claude M. Pearce, Isabel Sedgwick, Melville C. Strickland, J. P. Wallace, Sanford Whiting, Walter T. Williamson.

Part of Dr. Calvin S. White's remarks were as follows: "The State Medical Society has, in the death of Dr. Williamson, lost its wisest counselor. We have no doubt his spirit hovers over this meeting. If there ever was a man in any profession who does not need a stone or monument to mark his grave, it is Dr. Williamson. His influence goes on beyond the sphere of this life and I am sure that every member of the Oregon State Medical Society who knew Dr. Williamson in life is a better physician and a better member of this organization on account of having known him."

Dr. Wm. Kuykendall said in part: "Dr. J. P. Wallace was a man who has not been so prominent as our dear friend, Williamson, but he was a man typical of the high class medical man of the pioneer history of our state. He had been practicing medi-

cine 41 years. He began practicing in Albany, stayed there and was the benevolent, typical family physician. I do not know what higher ambition I would have than to leave behind me that kind of a legacy of love as Dr. Wallace left. The spirit which this morning prompts us to honor those who are gone should also prompt us to a little kinder feeling for the boys with whom we are working day by day."

Dr. Wilson Johnston said: "I should like to say a few words in memory of Dr. C. M. Pearce. I have known Dr. Pearce a number of years. He was always in attendance at medical society. He endeavored to be a man and he discharged his duty to his nation with a spirit that was commendable. The real admiration I had for him was during the last two years of his life, when he knew he was afflicted with a disease and yet carried on with a courage and a spirit that was commendable. He was a quiet man and yet he had innumerable friends who were gained by that spirit of fairness and spirit of discharging his duty."

Dr. Pettit, as trustee of the A. M. A., was called on for his report and made a short talk, but stated that a written report would be handed in for the files. Dr. Pettit also spoke of Dr. Williamson, remarking how much he was loved by the various trustees from the different states, and how his spirit seemed to hover over the meeting in Atlantic City the same as it did here.

Dr. Kinney appeared at the door and was asked to speak to the general session. He was escorted to the chair by Dr. Rockey, all present standing and cheering him. At Dr. Kinney's every appearance this same spirit of love, gratitude and reverence was shown by all. He could no sooner make his appearance than the assembly rose to its feet in a body and cheered him for some time. In his lovable way Dr. Kinney said: "Fellows, I just came in here one moment to ask you to excuse me today, if you will, and let me travel with Mrs. Kinney about the valley. If I can travel around this valley long enough, I may take her home a well woman and maybe I can help gather up that other 40 per cent that never came into the Society all these years. Will you please excuse me and we hope that we may meet yet for many years? Can I go?" Dr. Kinney was excused and the business again taken up.

A telegram from Dr. Garvin C. Dyott, regarding lights on physicians' automobiles, was read and on motion referred to the Council.

Dr. Rockey: "So far as I know there is no further business to come before the general session. Before we adjourn I should like to say that my plans had been made before I saw this program and, as I must catch a train, I shall ask the first vice-president, Dr. Holt, to preside during the scientific session.

Motion carried that the meeting adjourn to assemble again immediately after the meeting of the Oregon Public Health League.

#### REPORT OF SECRETARY

In accordance with constitutional requirement, the secretary submits the following report of the work of the past year.

It may be said that the general condition of the Society at this time shows a much healthier tone than of one year ago. The actual number of paid up members shows a considerable increase over last year. Quite a number, who have felt that the increase of dues was not justified, have become reconciled to the situation and are cooperating in the work of the Society.

Since the last annual session, officers and representatives of the Society have attended district meetings at Hillsboro, Salem, Marshfield, Grants Pass, Klamath Falls, Wallowa Lake and Bend. These meetings were well attended and much interest manifested in the general work of the State Society. The component societies throughout the state, with few exceptions, are in a healthy condition.

**Work of Council**

The Council has been meeting regularly on the last Thursday of each month. Early in the year, in accordance with constitutional provision, the state was divided into eight districts and councillors apportioned to them as follows:

District No. 1—Multnomah County—C. E. Sears, Otis B. Wright.

District No. 2—Clatsop, Columbia, Washington, Clackamas Counties—Hugh. S. Mount.

District No. 3—Polk, Yamhill, Marion, Tillamook Counties—W. B. Morse.

District No. 4—Linn, Lane, Benton, Lincoln, Coos, Douglas, Curry Counties—Wm. Kuykendall.

District No. 5—Jefferson, Crook, Deschutes, Sherman, Wasco, Hood River Counties—C. J. Smith.

District No. 6—Lake, Josephine, Jackson, Klamath Counties—R. S. Stearns.

District No. 7—Harney, Malheur, Baker, Grant Counties—E. B. McDaniel.

District No. 8—Wallowa, Union, Umatilla, Morrow, Gilliam, Wheeler Counties—R. C. McDaniel.

Each councillor is held responsible for the condition of societies in his district and, in most instances, the districts have been visited by their councillor.

The Council recently went on record approving the raise in salary of the editor of Northwest Medicine to \$250.00 per month; also completed the ratification of the action taken two years ago by the House of Delegates in setting aside \$2.00 per year per number for subscription to Northwest Medicine. It will be remembered that this action was to take effect when Washington and Idaho took similar action, which has since been done.

**Malpractice Suits**

Several malpractice suits have been filed against members during the past year. These cases have all been won by the defense when brought to court. An increasing number of members are carrying the General Accident Insurance Company policy. Some are still carrying the Aetna. It might be remarked in passing that all suits so far filed have been defended by the Aetna and these have cost the Society from \$100.00 to \$200.00 apiece. Had they been carried by the General Accident Insurance Company, the Society would have been to no expense. The

Medical Defense Fund of the Society, as will be seen by the attached report, is in a very healthy condition.

**Medical Legislation**

In conjunction with the Committee on Public Policy and Legislation as represented by the Oregon Public Health League, the Society engaged in a strenuous legislative campaign last winter. In October, a committee, consisting of Drs. W. T. Williamson, C. U. Moore, C. J. Smith, Otis B. Wight and Wm. Kuykendall, was appointed to draft a new Medical Practice Act. This committee, working with the League, after a thorough investigation of medical practice acts of other states, finally brought forth the measure which was introduced at the last legislative session. After having run the gamut of the committees in the House, it was allowed to die, as it seemed impossible at the time to put it through the Senate. It had the effect, however, of stirring up considerable discussion and probably prevented the introduction of other measures which might have been inimical to the medical profession. As it was, all such measures were defeated. It is to be hoped that, when the time comes for another legislative session, there will be a more loyal medical profession and enlightened public sentiment behind a similar measure. It needs only to be mentioned that there are a large number of naturopaths and other quacks and pathies who are practicing all sorts of medicine in the state of Oregon by the sufferance of a tolerant public and medical profession. These could be easily driven out of our state even by the use of the present legal machinery, provided someone had the necessary amount of backbone to go ahead and push the cases.

On July 29, 1925, the Council and executive committee of the league met at a dinner with Senators Stanfield and McNary, and Representatives Crum-packer and Hawley to go over the matter of a reduction of the physicians' narcotic tax and the Government's refusal to allow a physician to list his traveling expenses while attending postgraduate work, etc., in his income tax report. It is to be hoped that this meeting will be productive of good at the next meeting of Congress.

**Honorary Members**

The committee on honorary membership, consisting of Drs. C. J. Smith, E. B. McDaniel, and C. L. Booth, at various times during the year, have recommended to the Council the following names: Drs. Mae H. Cardwell, A. C. Kinney, A. W. Moore, J. S. Moore, A. E. Rockey, G. M. Wells, C. H. Wheeler.

**Membership Report**

The membership report is herewith given:

	No. Members Carried	No. Paid 1925	No. Unpaid 1925
Baker County Medical Society.....	11	2	9
Central Oregon Medical Society.....	12	6	6
Central Willamette Medical Soc.....	26	7	19
Clatsop County Medical Society.....	12	9	3
Coos & Curry County Medical Soc.	23	15	8
Eastern Oregon Medical Society....	27	18	9
Jackson County Medical Society....	14	9	5
Klamath & Lake County Med. Soc.	13	12	1
Lane County Medical Society.....	30	24	6
Mid-Columbia Medical Society.....	16	9	7

Polk-Hamhill-Marion Medical Soc...	58	24	34
Southern Oregon Medical Society..	14	6	8
Tillamook County Medical Society..	6	2	4
Portland City & County Med. Soc...	357	257	100
Associate Members .....	7	0	7
Non-Resident Members .....	6	2	4
Totals .....	632	402	230

**Necrology**

During the past year the following members have died:

- Dr. Sanford Whiting, Portland, Dec. 23, 1924.
- Dr. W. T. Williamson, Portland, Mar. 2, 1925.
- Dr. J. I. Mershon, Marshfield, Mar. 22, 1925.
- Dr. J. L. Loomis, Portland, Apr. 19, 1925.
- Dr. C. M. Pearce, Portland, June 27, 1925.
- Dr. W. C. Hawk, Tillamook, July 9, 1925.

**Financial Statement**

The amount of \$12,737.85 has been collected through this office from dues since May 22, 1924, to and including August 28, 1925, at which time the last remittance before the annual meeting was made to the treasurer. This sum includes component society dues which were later remitted.

Disbursements from the general fund during this period have been as follows:

Invested in Liberty Bonds.....	\$ 5,169.64
Amount Remitted to Oregon Public Health League .....	4,751.80
Refund of Portland City and County dues..	1,840.75
Refund of Eastern Oregon dues.....	25.00
Refund of Mid-Columbia dues.....	24.00
Refund of Southern Oregon dues.....	6.00
Turnover to Medical Defense Fund.....	1,431.00
Subscriptions to Northwest Medicine.....	941.00
Expenses of Annual Meeting, 1924.....	344.10*
Printing .....	143.35
Rent .....	247.50
Executive Secretary expenses .....	137.05
Postage .....	80.00
Stationery and office expense.....	162.54†
Telephone and Telegraph.....	39.52
Office salaries .....	66.68
Paid for new typewriter.....	47.03
Refund to Dr. J. M. Batcheller estate.....	15.00
Miscellaneous expense .....	14.00
Petty Cash .....	5.00
<b>Total .....</b>	<b>\$15,490.96</b>

\* \$22.50 of this amount represents expenditure for 1925 meeting.

† This amount includes \$100.00, cost of auditing books in December, 1924.

**Medical Defense Fund**

Balance on hand Dec. 31, 1924.....	\$2,457.74
Legal Expense to July 31, 1925....	\$ 409.45
Invested in Liberty Bonds.....	2,000.00
<b>Total Disbursements .....</b>	<b>\$2,409.45</b>
Balance in Checking Account....	48.29
Medical Defense Fund (Liberty Bonds) .....	\$6,957.50
Medical Defense Fund (Savings Account) .....	425.00*
<b>Total Assets Medical Defense Fund .....</b>	<b>\$7,430.79</b>

\*Represents coupons clipped and deposited in savings account.

During the year offices have been occupied with the Oregon State Board of Pharmacy and the Oregon Public Health League. These have been in

charge of Mr. Frank S. Ward, executive secretary, and Mrs. Lulu E. Sherman, assistant, who have at all times given the fullest co-operation.

As previously mentioned in this report, beginning with January 1, 1925, the subscription price for Northwest Medicine has been raised from \$1.00 to \$2.00 per year.

The salary of the stenographer was raised from \$66.67 to \$81.67, effective March 1, 1925.

The new postal rates effective April 15, 1925, require that 1½c postage must be paid for the League Bulletin.

Beginning with June 1, 1925, the phone bill will be \$11.00 per month, paid as follows: One-fourth by Oregon State Medical Society, one-fourth by Oregon Public Health League, one-fourth by Oregon Board of Pharmacy, one-fourth by Frank S. Ward.

Beginning with June 1, 1925, rent was \$37.50, paid as follows: One-half by Oregon Board of Pharmacy, one-fourth by Oregon State Medical Society, one-fourth by Oregon Public Health League.

The offices will be moved to the new Medical Arts Building as soon as it is completed, which will be about November 1, 1925. The rent there will be \$54.00 per month, paid as follows: One-half by Oregon Board of Pharmacy, one-fourth by Oregon State Medical Society, one-fourth by Oregon Public Health League.

It will be seen from the financial report that a considerable amount during the past year, both in the Medical Defense Fund and in the General Fund, has been invested in Liberty Bonds.

At this session a committee will report on the dues for associate and non-resident members, a matter which is not clearly stated in the constitution.

The activities of the committee on Public Policy and Legislation as represented by the League will be presented in a report by Mr. Frank S. Ward, executive secretary.

The American Medical Association is extremely anxious that more emphasis should be laid upon the propaganda for the periodic examination of well persons. Every practicing physician, not a specialist, should be fully able and willing to do this work, for it certainly should not pass into the hands of commercial agencies.

Not all the members are aware of the fact that any of the other journals published by the American Medical Association may be substituted for The Journal of the A. M. A. by payment of the difference in price, if any.

In the death of Dr. Walter T. Williamson the Society, as well as the profession as a whole, lost a great friend. To the last he gave his best effort to the advancement of the interests of medical organization. In his relations with the other trustees of the A. M. A., his sagacious counsel came to be most highly regarded. The House of Delegates, in choosing a successor to Dr. Williamson, again saw fit to honor Oregon in the person of Dr. J. A. Pettit, who was elected to fill the unexpired terms. This comes as a distinct recognition of Dr. Pettit's faithful ser-

vices as a member of the House of Delegates in the past.

In this connection, it may be mentioned that the 1926 meeting of the A. M. A. will be held at Dallas, Texas, and that there is some talk of having the 1927 meeting in Portland. If so, it is none too early to get busy now in laying plans for this.

It seems worth while to emphasize the growing evil of medical pauperization in our larger cities. In a medical center like Portland there are a very large number of organizations dabbling in social service work, as represented by children's hospitals, welfare bureaus, baby homes, maternity homes, dispensaries, etc. These clinics all exist through the free services of physicians who are called upon to give largely of their time and means to these organizations, which could not exist without them. Forbid that we should withhold anything from those in real need, but an investigation of these so-called "charity organizations" reveals the fact that many persons are receiving medical service free who could well afford to pay at least a moderate amount for professional services. The people are getting in the habit of obtaining aid through these organizations, when they should be made to patronize their neighborhood physicians. Hundreds of thousands of dollars of such work is lost to the physicians annually in this state which rightfully belongs to them. My recommendation would be a much more thorough investigation of all applicants for relief by a central clearing house committee, on which there should be medical representation. No other profession gives so freely of its service to charity and all too quickly are these services forgotten, when the profession asks for more stringent protective laws.

In conclusion, may I say that I feel that never before in the history of the Society has it faced a more favorable time for constructive work along many lines. The foundation is now well laid and there remains only the superstructure to be erected upon it. There has been some talk of curtailing the activities of the Society. To do so would be only a backward step. There is a great work to do and it requires only the selection of officers who have the time and willingness to go ahead with it. Such, I hope, will be the program as carried out by my successor.

C. L. BOOTH, M. D.  
*Secretary.*

#### LOCAL PUBLICATION COMMITTEE

I beg to make a report as chairman of the Local Publications Committee.

There has been no call upon this committee for any work during the past year. Therefore, it has not functioned.

OTIS B. WIGHT, *Chairman.*

#### COMMITTEE ON MEDICAL EDUCATION

The committee is glad to report a most satisfactory condition of medical educational facilities in the state of Oregon. The School of Medicine of the University of Oregon is maintaining its high standard. Its recognition as a high grade medical school by intending students is shown by the fact that one

hundred and fifty students sought entrance to the Freshman class this year, though the number entering is limited to seventy.

Many lectures and addresses have been provided for by the Portland Academy of Medicine and the various county societies, particularly the Portland City and County Medical Society. These addresses on professional subjects have proved of inestimable value as auxiliaries to postgraduate work and are greatly appreciated for their beneficial influence.

S. E. JOSEPH, *Chairman.*

#### REPORT OF MEDICAL LEGAL DEFENSE COMMITTEE

Of the nine cases referred to this committee during 1924-25, involving an amount of \$298,876, two are still pending. In one a verdict in favor of the doctor was given by the judge at the end of the testimony, on the ground that malpractice had not been shown. Two cases went to trial before a jury and a verdict was returned by the jury in favor of the doctor. Three cases were nonsuited on the ground that no malpractice had been shown. One case was set for trial but dismissed at the request of the attorney for the plaintiff.

In none of these cases was the committee able to say definitely that a member of this society was instrumental in bringing the suit. At all times we have received loyal support and assistance from the members. When called, the members have been very ready and very willing to give their time and knowledge in the defense of their fellow members.

We feel that this record is a good one but believe the number of cases should be materially lessened and would only reiterate the warning that all cases, particularly of injury, are potential malpractice cases and that too much care cannot be exercised in handling them. Complete, concise case histories, with consultation in all serious or doubtful cases, would go a long ways in the prevention of malpractice suits.

We find that all the members desire to have the advice of the society's counselors, Carey & Kerr, in the conduct of their cases. The insurance, however, is still carried by many members in companies other than that selected by the State Society.

Each time Messrs. Carey & Kerr are called as counselors for a member who is insured in another company, it costs the Defense Fund \$200.00 or more. It would seem that the Defense Fund could be conserved to this extent, provided all the members would insure with the company selected by the State Society.

#### Regulations Governing the Medical Defense Fund

At the Annual Meeting in 1917 the House of Delegates amended the constitution "so as to maintain a plan of mutual or cooperative defense of its members from malpractice suits."

Section V. The Council shall constitute the Committee, and shall render all possible aid to the threatened member. In accordance with the following rules, it is available for any member of the Association in good standing, who may be threatened by a suit of malpractice.

I. The threatened member must himself have been in good standing at the time the services were rendered.

II. A member in good standing is one who has paid his dues on or before the first day of the Annual Meeting of that year of the State Society.

III. If a member was in good standing when services were rendered, and should he resign from the State Society, or move to another state, this Society will defend him, in case of malpractice where alleged malpractice has been committed, while member was in good standing in this Society, and he left this Society in good standing.

IV. The Defense Fund of the Oregon State Medical Society is for **defense only**.

V. The Defense Fund of the Oregon State Medical Society is **not** for the payment of judgments.

VI. This fund is for the defense of malpractice, where no malpractice has been committed.

VII. In case of threatened malpractice suit notify the secretary of Oregon State Medical Society. He will notify you to meet with the Council of the State Society, or to communicate with it. You should be prepared to submit to the Council all data and records relative to the case.

VIII. The council will agree with the accused in selecting from the profession witnesses who are best qualified to furnish medical expert testimony. Medical expert testimony in courts by physicians must be standard in itself, and impartially submitted to the court.

IX. The State Medical Society Defense Fund will pay the expenses of expert medical witnesses to any part of the state, where malpractice suit is brought, also attorneys' fees.

X. The council of the Oregon State Medical Society has appointed Hon. Charles H. Carey as Advisory Counsel. It is the intent of the council to employ other attorneys where suits are brought in distant parts of the state. The selection of such attorney to be by the council and the member being sued for malpractice.

XI. The council of the Oregon State Medical Society will not be responsible for expenses incurred without its authority.

#### Summary of Work of Medicolegal Defense Committee During the Year 1924 and to August 12, 1925

Case brought to recover \$15,000 on account of an infection resulting in the loss of the right leg. Case resulted in a directed verdict on the ground that malpractice had not been shown.

Case brought to recover \$20,000 on account of malpractice in setting a fractured leg and dislocated ankle. Resulted in a judgment of nonsuit on the ground that no evidence of malpractice had been shown.

Action for \$15,000, brought on account of the failure to properly treat a dislocated left sternoclavicular joint. Case dismissed by attorneys for the plaintiff before trial was had.

Action for \$25,000, based on the claim that the defendant physician had performed an unauthorized

operation. Case resulted in a verdict by the jury in favor of the physician.

Action for \$51,194.60, brought on the claim that the physician was guilty of malpractice in neglecting the treatment of a fractured leg, resulting in the loss of the leg. Resulted in a verdict by the jury in favor of the physician.

Action for \$12,000 on a claim that the physician had been guilty of malpractice in treating a case of acne. Case was tried before a jury, resulting in a judgment of nonsuit, on the ground that no evidence of malpractice had been produced.

Action for \$10,150, based on the claim that the defendant had been guilty of malpractice in the use of x-ray treatments. Case was tried before a jury, resulting in a judgment of nonsuit on the ground that no evidence of malpractice had been produced.

Action for \$50,532.75 on account of claim for malpractice in the treatment of plaintiff's left eye, resulting in loss of the eye.

An increasing number of cases have been brought each year and the Medical Society has been very fortunate in securing so many successful results in rather serious cases.

WILSON JOHNSTON, *Chairman*,  
HUGH S. MOUNT,  
A. E. MACKEY.

#### REPORT OF COMMITTEE ON INDUSTRIAL ACCIDENT COMMISSION AFFAIRS

We, your committee, have nothing in particular to report as to the Industrial Accident Commission Affairs during the past year. You will remember we filed a report one year ago and, as the results of our report and work, we succeeded in defeating what was apparently an objectionable amendment to the constitution of the state of Oregon, having in mind the compulsory and other obnoxious features in the proposed Workmen's Compensation Act. Questions of complaint as to the method of administration of the present act had been heard, but since that time not a single written complaint has come to the attention of the committee.

Therefore, we would recommend the continuance of such a committee for the purpose of hearing any complaints or making any investigations in connection with the administration of this act; and, if it is deemed wise on the part of the House of Delegates, any amendments indicated by their experience in connection with the administration of the Workmen's Compensation Act might be proposed either by initiative at the next election or to the next session of the legislature.

C. J. SMITH, *Chairman*,  
HUGH S. MOUNT,  
W. B. MORSE.

#### REPORT OF BOARD OF JOURNAL TRUSTEES

We, your trustees for Northwest Medicine in the state of Oregon, beg leave to submit the following report.

Owing to a change of our by-laws, permitting us to collect \$2.00 for Northwest Medicine, the state of Oregon was the first state to contribute that amount per capita for her membership and was the means of

assisting Northwest Medicine to bring about such a change in the other states, and as we understand it now, they are able to collect from each member of the affiliated states, Oregon, Washington, Idaho and Montana \$2.00 per capita and by so doing the Journal has very materially increased in size, usefulness and efficiency for the membership.

Recently Dr. Dudley of Seattle, who is the president of the Board of Journal Trustees for Northwest Medicine, submitted to each member of the Board the question of the raising of the salary of Dr. Clarence A. Smith, Editor-in-Chief, from \$200.00 to \$250.00 per month and, with the consent of the Board of Councillors of this state, with the chairman of the Board of Trustees of the state of Oregon indicated their willingness to the raise of the salary as requested by Dr. Dudley.

By the way of history, we want the profession to bear in mind that Northwest Medicine is the official journal for the medical profession of the state of Oregon. When it was initiated, it was definitely understood that, as long as Oregon maintained a medical school and the exclusive medical school for the Pacific Northwest, Washington should be granted the right to publish the official journal, and upon that stipulation it was agreed that the Journal's policies should be conducted by three trustees from each state participating.

At that time the states of Oregon, Washington and Idaho were the founders of Northwest Medicine; since then the states of Montana and Utah have been added but Utah has since gone to the state of California. It was also agreed at that time that each state should select three trustees. The first trustees selected for the state of Oregon were Drs. Kenneth A. J. Mackenzie, W. T. Williamson and C. J. Smith. On the death of Dr. Mackenzie, Dr. E. B. Pickel of Medford was named to fill the vacancy and on the death of Dr. Williamson, Dr. R. C. Coffey was named to fill the vacancy.

Therefore, the present Board of Journal Trustees from this state consists of Drs. E. B. Pickel, R. C. Coffey and C. J. Smith.

Respectfully submitted,

C. J. SMITH, *Chairman.*

#### PROPOSED RESOLUTIONS FOR ADOPTION BY OREGON STATE MEDICAL SOCIETY, RELATIVE TO TAX REDUCTION.

##### Reduction of Tax Under the Harrison Narcotic Act

Whereas, As a condition necessary to give validity to the Harrison Narcotic Act, a tax of \$1.00 a year was imposed at the time of its enactment, to be paid by all persons registered under it:

Whereas, The jurisdictional tax thus imposed was, as an incident of the World War, converted into an occupational tax on all physicians prescribing narcotics, for revenue purposes, by Section 1006 of the Revenue Act of 1918, the tax then imposed being largely in excess necessary for jurisdictional purposes;

Whereas, The war tax thus imposed on physicians for revenue purposes was continued in effect by Section 1005 of the Revenue Act of 1921 and, notwithstanding that the prime purpose of the Revenue Act of 1924 was to reduce federal taxes, was con-

tinued in effect by Section 705 of that Act, and is still in effect; and,

Whereas, There is no discoverable reason for imposing on the practice of medicine a federal occupational tax that is not imposed on the professions generally, nor for continuing a war tax on the practice of medicine after other businesses, trades and professions generally have been relieved of such tax; therefore, be it

Resolved, That in the judgment of the Oregon State Medical Society, the continuance of the occupational tax now imposed on the medical profession by Section 705 of the Revenue Act of 1924, under the Harrison Narcotic Act, constitutes an unjust discrimination against the medical profession and an unnecessary continuance of the war tax in time of peace;

Resolved, That the President and the Congress be asked to abolish the occupational tax now imposed on physicians under the Harrison Narcotic Act and to restore said tax to a peace basis, not exceeding the amount necessary to continue in the federal government jurisdiction over the persons and subject matter affected by said Act;

Resolved, That copies of this resolution be sent to the President and the Secretary of the Treasury, and to the Senate Committee on Finance and the House of Representatives Committee on Ways and Means; and,

Resolved, That the officers of the Oregon State Medical Society be authorized and empowered to take whatever action may in their judgment be necessary to procure a readjustment of this tax on the basis stated above.

##### Tax on Attendance at Medical Meetings and on Postgraduate Study

Whereas, Under Section 214 (a) of the Revenue Act of 1921 and under the section similarly numbered of the Revenue Act of 1924, every taxpayer engaged in any trade or business (which for the purpose of said acts includes every person engaged in any profession) is entitled, before computing his federal income tax to deduct from his gross income all the ordinary and necessary expenses of his trade or business, including traveling expenses while away from home in the pursuit of said trade or business;

Whereas, Under rulings of the Commissioner of Internal Revenue a physician is not allowed, before computing his federal income tax, to deduct from his gross income the expenses of attending medical meetings and of postgraduate study, and thereby in effect is taxed on such attendance and study;

Whereas, Attendance at medical meetings and postgraduate study are in fact ordinary and necessary parts of the practice of medicine, and such expenses as may be incurred by reason of such attendance and study are in fact ordinary and necessary expenses incurred by the physicians in carrying on his profession and in pursuit of it; and,

Whereas, Taxpayers generally, namely manufacturers and merchants, are allowed before computing their federal income taxes to deduct such expenses as they may have incurred in keeping their equipment, stock and business methods up to date, while the physician is not allowed to deduct the aforesaid expenses which he incurs in keeping his professional knowledge and skill up to date; be it

Resolved, That in the opinion of the Oregon State Medical Society the rulings of the Commissioner of Internal Revenue have placed on Section 214 (a) of the Revenue Acts of 1921 and 1924 a construction that discriminates unjustly against the physician, as compared with the manufacturer and merchant and that is in substance a tax on scientific and professional efficiency;

Resolved, That in the opinion of the Oregon State Medical Society Section 214 (a) of the Revenue Act of 1924 should be amended so as to do away with this discrimination and to permit physicians before

computing their federal income tax to deduct as professional expenses such expenses as may have been incurred in attending medical meetings and in postgraduate study;

Resolved, That the President and the Congress be asked to amend Section 214 (a) of the Revenue Act of 1924 so as to permit the deduction of expenses of attending medical meetings and of postgraduate study as aforesaid;

Resolved, That copies of this resolution be sent to the President and the Secretary of the Treasury, and to the Senate Committee on Finance and the House of Representatives Committee on Ways and Means; and,

Resolved, That the officers of the Oregon State Medical Society be authorized and empowered to take whatever action may in their judgment be necessary to procure the amendment of the Revenue Act of 1924 in the manner aforesaid.

#### HOSPITAL BETTERMENT COMMITTEE

The report for the Hospital Betterment Committee will not be long. There is very little that we were called upon to do during the year and we did not seek out new work for ourselves. There were two or three instances where we were called upon to investigate the claims of places that wish to be recognized as hospitals in the American Medical Directory. Some of these we were able to report on favorably and others unfavorably. The application of the Portland Sanitarium was considered by the members of the committee and recommended for internship to the American Medical Association.

When the American College of Surgeons is spending so much money in investigating hospitals and making suggestions as to their standardization, it seems almost unnecessary for a State Society to try to duplicate this in any way at all. It is evident to everyone who has been in hospitals that they are vastly better now than they were five or ten years ago. A great many of the smaller hospitals we find are well equipped for thorough work. Sometimes we wonder if the hospitals have not better equipment in apparatus than they have in those using the apparatus.

M. B. HOLDEN, *Chairman.*

#### COMMITTEE ON HONORARY MEMBERSHIP

We, your committee on Honorary Membership, beg leave to submit the following list whom, upon investigation, we recommend to the House of Delegates for honorary membership: Drs. Alfred C. Kinney, Mae H. Cardwell, A. W. Moore, J. S. Moore, A. E. Rockey, G. M. Wells, C. H. Wheeler.

C. J. SMITH, *Chairman.*

E. B. McDANIEL,

C. L. BOOTH,

*Committee.*

#### REPORT OF MILITARY COMMITTEE

It is believed that the doctors of the nation will give their services in war in the future as they always have in the past; and that a better service may be rendered in a future emergency by giving some thought to the subject at a convenient time.

We are now requested to support the national program of defense, as laid down by Congress in the National Defense Act, and it is desirable for best results that we enroll in the Medical Reserve Corps.

This requires no military duty whatsoever during peace time, but it does create a reserve paper army which does away with the expense and military show of a large standing army.

We, the Military Committee, therefore, recommend that the Oregon State Medical Society go on record as being in hearty support of the movement for the development of the Medical Officers Reserve Corps.

That the members of this Society be requested to enroll in the Medical Officers Reserve Corps.

That county medical societies and other component societies of this Society be requested to have their members enroll in the Medical Officers Reserve Corps; and, particularly interest themselves in the organized units of the army in their vicinity and assume an active sponsorship and support for such units.

That each county society and each component society of this Society be requested to set aside one regular meeting each year as Medico-Military Night, in order that the means of preventing disease and caring for the sick, as practiced in the army, may be given to the medical profession in general.

H. M. GREENE,

G. E. HOUCK,

V. R. ABRAHAM,

F. D. STRICKER,

*Committee.*

#### REPORT OF AUDITING COMMITTEE

We, your Auditing Committee, have looked over the Treasurer's Report, dated Sept. 1, 1925, and that of the Executive Secretary of same date. Apparently they are correct. We have no means of checking over check stubs and receipts in the bank books and securities of this society.

We would recommend that an auditing committee be appointed to check the above and report at next stated meeting of the council of this Society. Further, that each year, at least thirty days before the annual meeting of the Society, the president appoint an Auditing Committee who shall go through the books of the secretary and treasurer, and make report at the annual meeting.

OTIS B. WIGHT

C. E. SEARS

*Committee*

#### REPORTS OF COUNCILLORS

##### Multnomah County

Referring to the report as Councillors for Multnomah County, we would state that the districting of the state was done at a meeting which we did not attend, when we were appointed to have charge of Multnomah County under Chapter VII of the Constitution. We received no official notice as to when this work should begin and, therefore, have been unable so far to do anything along this line. In the fall we will endeavor to carry out some active work.

OTIS B. WIGHT,

C. E. SEARS.

##### Clackamas County

At the suggestion of Dr. Hugh Mount of Oregon City I personally interviewed the practicing physicians of Clackamas County, who were not members

of the Oregon State Medical Society. I asked them if they had any intention of affiliating themselves with this Society and pointed out the numerous advantages to be derived by being members. However, the opinion expressed by the physicians interviewed showed that they had no intention of joining the Society, as they were of the opinion that matters pertaining to their own private practice would not be dealt with in the State Society.

I was certainly greatly disappointed with the result of these interviews, but probably at a future date the worth of the State Society will be more self-evident to the physicians in question.

F. W. WALLACE, M. D.

#### **Benton, Coos, Curry, Douglas, Lane, Linn, Lincoln Counties**

Your Executive Secretary has been so unkind as to call my attention to Section 2, Chapter VII of our By-Laws which provides that each Councillor "Shall make an annual report of his doings, and of the condition of the profession of each component society in his district to each annual session of the House of Delegates of this society." I believe each councillor will agree that we were so late getting into action under this provision, that it was impossible to carry it out in full.

While I have not yet visited each county, I have gotten into communication with trustworthy members of the profession in each and have been able to make a fairly accurate diagnosis of the conditions. In my letter sent into each county I enclosed a list of licensed physicians and their status with relation to the State Society, as furnished by the Executive Secretary. In addition to a report on each individual case, I asked for a consensus of reasons given by non-members as to why they did not join. Several minor reasons are given but the one almost universally urged is that the state dues are too high.

A paragraph from one of the letters is so frank and expressive that I cannot refrain from quoting it: "Most of the men here who are not members are men who think a great deal of a dollar; they do not belong or contribute to anything they can get out of. They feel that the state dues are too high and are not in sympathy with the Public Health League." I am not quoting this as approving its sentiments, but only to get the facts before us. There is no disguising the fact that this presents a wide-spread feeling. This being true, we clearly have a big field mapped out for us in the way of educational work. This must be done, not only by appearing before meetings of the component societies, but by individual effort with the physician himself.

One of my correspondents has put it very aptly: "About the only way they could be persuaded to join would be for some influential men to sit down and talk with them in an earnest endeavor to make them see the light." I shall doubtless have to call upon other members of the council and of this House of Delegates to help me out in my district.

I am planning a systematic campaign for the coming year and have one meeting already scheduled,

that of Coos County Society for next Tuesday, Sept. 8.

I can make a very favorable report as to all the component societies in my district. They are all alive and doing excellent work for the profession in their respective territories.

W. KUYKENDALL.

#### **Josephine, Jackson, Lake and Klamath Counties**

These comprise two complete societies, viz Jackson and Klamath. Personal communication show the following conditions: Jackson County is functioning nearly 100 per cent membership; meetings are held every two weeks and much good is being accomplished.

Klamath County is holding only occasional meetings. Professional jealousy interferes somewhat with successful work. I have had no opportunity of visiting either society at time of this meeting.

R. S. STEARNS.

#### **SCIENTIFIC SESSION**

Wednesday, September 2

Meeting called to order at 2 p. m. by Dr. Bouvy. Rev. E. P. Lawrence pronounced the invocation.

As Mayor Alenderfer was unable to be present, he was represented by Mr. C. E. Gates, ex-mayor of Medford, who delivered the address of welcome. He spoke briefly of the attractions of Jackson County, mentioning the fine highways, the fishing to be had in Rogue River, and the trip to Crater Lake, even going so far as to say that a caravan would be organized to take the visiting physicians and their wives to Crater Lake, if they couldn't get there any other way.

Dr. Wm. Kuykendall was called on for the response. He thanked Mr. Gates for the hearty welcome and accepted it on behalf of the members of the Society, saying that he knew they would be glad to come back and visit Jackson County once again.

#### **PROGRAM**

The Use of Radium in Uterine Hemorrhage. Dr. Otis B. Wight, Portland.

The Forming of Surgical Opinion in Lower Abdominal Cases. Dr. Eugene W. Rockey, Portland.

Carcinoma of the Large Intestine. Dr. C. A. Hamann, Cleveland, Ohio.

Surgery of Chronic Dysentery. Dr. Robert C. Coffey, Portland.

Surgery of the Prostate. Dr. R. J. Conroy, Medford.

Treatment and Care of the Patient Infected with the Parasite of Syphilis. Dr. H. M. Greene, Portland.

8:00 p. m.

#### **PUBLIC MEETING**

Dr. E. A. Sommer, chairman of the executive Committee of the Oregon Public Health League, presiding

The Child Health Program and the Family Physician. Dr. Walter H. Brown, Salem.

Periodic Examination of Well Persons. Dr. Harold C. Bean, Portland.

Accomplishments of the Oregon State Board of Health. Dr. C. J. Smith, Portland.

Aims and Purposes of the Oregon Public Health League. Dr. Wilson Johnston, Portland.

Public Address on Cancer with Exhibition of Film. Dr. Ernest F. Tucker, Portland.

Thursday, September 3  
9:30 a. m.

Some Features in the Diagnosis and Treatment of Gall-Bladder Diseases. Dr. C. A. Hamann, Cleveland, Ohio.

Symptoms of Ureteral Stricture. A study of one hundred cases, with synopsis of fifty cases, with lantern slides. Dr. Alexander H. Peacock, Seattle.

Chronic Ureteritis as a Source of Abdominal Pain. With lantern slides and case reports. Dr. H. W. Howard, Portland.

Pyuria—Significance of its Presence or Absence in Urological Conditions. Dr. John G. Cheetham, Portland.

Relative Benefits and Responsibilities of the Oregon Compensation Law. Dr. A. C. Crank, Portland.  
1:00 p. m.

Obstetric Symposium.

The Gwathmey Method of Anesthesia in Obstetrics. Dr. C. E. Hunt, Eugene.

Morphine-Scopolamine Narcosis in Obstetrics. Dr. A. W. Holman, Portland.

Prolonged labor. Dr. J. T. McKay, Hillsboro.  
Summary of Present Day Treatment of Eclampsia. Dr. C. J. McCusker, Portland.

Spinal Anaesthesia. Dr. W. T. Phy, Hot Lake.  
Some Diagnostic Points in Thoracic Adenitis. With lantern slides. Dr. E. A. Pierce, Portland.

6:00 p. m.

Organization of Woman's Auxiliary.

7:00 p. m.

Annual Banquet, Medford Hotel.

All physicians and their ladies.

President's Address:

The All Round Good Doctor—Then and Now. Dr. Alfred C. Kinney, Astoria.

Friday, September 4

9:00 a. m.

General Session

Reading of Minutes of House of Delegates.

Election of Officers.

Election of three Councillors.

Election of one Delegate to the A. M. A.

Presentation of the Gorgas Memorial Report by Dr. E. A. Sommer.

10:00 a. m.

ANNUAL MEETING OF THE OREGON PUBLIC HEALTH LEAGUE

President C. J. Smith, presiding

Reports and election of seven directors.

Adjournment of General Meeting of Oregon Public Health League.

Meeting of Directors and election of Officers and Executive Committee.

Scientific Session

Twenty-four Hours of a General Practice. Dr. Warren L. Hunt, Klamath Falls.

The Effect of Iodine Deficiency Upon the Human Thyroid Gland. Dr. J. Earl Else, Portland.

Studies and Results of Thyroid Work. Dr. Thomas M. Joyce, Portland.

Trypanosomiasis. Dr. Ira P. Bartle, North Bend.  
Adjournment.

#### WASHINGTON

##### KING COUNTY MEDICAL SOCIETY

Pres., A. C. Crookall; Secty., C. E. Watts

The Surgical Section of King County Medical Society met at Seattle, Wash., Sept. 14, 1925, Chairman R. D. Forbes presiding, Secretary H. G. Wright. Fifty-six members were present.

##### PROGRAM

The first paper was by Dr. O. A. Nelson on "After-treatment of the Prostatic to Insure Good Bladder Function." He mentioned the various causes of

bladder obstruction. Proper measures and care during and after operation eliminate many unpleasant sequellae. In order to keep the bladder wound free from infection he advocated the syphon tube, and later self-retaining catheters. If necessary, these could be followed by various irrigations of the bladder. Pustular eruptions near the wounds only occur where alcohol or other fat solvents are used in cleaning the wound or the area.

In discussion Dr. Hepler stated it was surprising to note the number of functional failures in the removal of the prostate. He stressed hypertrophy instead of the usual atrophy of the trigone. Most failures are due to incomplete enucleation. He believed the perineal operation the one of choice. Dr. Jacobsen believed the perineal operation the better and that it is not necessary to pass sounds frequently after operation.

Dr. Nelson stated he believed in most instances the perineal route gave the best results, except where the trigone was shriveled. In this type he believed the suprapubic better because of the excellent exposure it gave. By the passage of sounds patients could be kept drier.

Dr. Hanley, Commissioner of Health of the City of Seattle, urged cooperation between the medical men, the Society and the Department of Health. He outlined the growth and development of the Health Department, and stated he wished to have a committee appointed by the King County Medical Society, which would confer with the Commissioner of Health each month, with the objective in view of putting out a more complete bulletin in the Health Department.

Dr. Turner spoke on cooperation of the entire medical fraternity with the Health Department; also on diphtheria prevention, and giving of toxin-antitoxin. He stated diphtheria is increasing, the Health Department wished to eradicate it, and asked cooperation of the King County Medical Society in doing this.

In discussion Dr. Underwood made a motion that the Health Department furnish toxin-antitoxin to the physicians, who in turn would give it to such patients as desired free of charge. Dr. McCowen stated that each child should be Shick-tested, because of the fact that many are immune. Dr. Swift discussed the subject, and seconded the motion. Dr. Lester Palmer stated this procedure would establish a bad precedent, and it would not be as successful a campaign as if a charge were made for the services.

Dr. Hanley stated he would rather have a charge made for the services. In case a patient was unable to pay for the toxin-antitoxin, the Health Department would furnish it to the physicians gratis. Dr. Turner stated there would be clinics conducted by the Health Department for those who did not wish to go to private physicians.

Dr. Parker asked if there were any anaphylactic reactions to be expected. Dr. Turner stated that anaphylactic reactions were seen in only about thirty per cent of adults, in small children practically none.

Dr. Underwood's motion was voted upon and lost.

Dr. Don Palmer moved that King County Medical Society offered to cooperate with the Board of Health in carrying out its campaign against diphtheria. Seconded by Dr. Lundy. Carried.

#### PIERCE COUNTY MEDICAL SOCIETY

Pres., W. B. McCreery; Secty., W. B. Penney

The regular meeting of the Pierce County Medical Society was held at the Winthrop Hotel, Tacoma, Wash., Sept. 8, 1925, preceded by a dinner. Minutes of the previous meeting read and approved.

##### PROGRAM

Dr. Walter Kelton, Medical Adviser of the State Industrial Bureau, gave a talk on the problems of his position, and promised fair play and cooperation to the doctors of the state.

Dr. W. B. McCreery gave a very interesting and entertaining talk on his trip to Europe. This was acclaimed by all as the best travel talk ever given before the society.

Dr. J. F. Griggs gave a very interesting report of his trip abroad with the Travel Study Tour, as arranged by the Tri-State Medical Society.

##### BUSINESS

Dr. Whitacre stated, for the Public Health League, that the Oregon plan as presented last year would not be considered again this year but that an entirely different plan was under discussion by the League and the trustees of the State Medical Association and would be presented at the Seattle meeting. Motion was made and seconded that action on the Oregon plan by the Pierce County Medical Society be deferred and the delegates be instructed to use their own judgment in the new proposal.

A communication was read from the American Medical Association in regard to A. M. A. automobile emblems and by motion was ordered laid on the table.

A communication was read from the American Institute of Banking, Tacoma Chapter, asking permission to use the Medical Society rooms for their meetings the same as last year. This was approved.

There being no further business, the meeting adjourned.

#### WHITMAN COUNTY MEDICAL SOCIETY

Pres., L. G. Kimzey; Secty., Frank St. Sure

A regular meeting of Whitman County Medical Society was held at Colfax, Wash., September 28, at 7:30 p. m.

##### PROGRAM

"Balantidial Dysentery, with Report of a Case," Dr. D. T. Ford, Pullman.

"Diarrhea in Children," Dr. W. A. Mitchell, Colfax.

"X-Ray Diagnosis of Tuberculous Diseases of the Lungs," Dr. Frank S. Miller, Medical Director Edgecliff Sanatorium, Spokane.

"X-Ray Diagnosis of Non-Tuberculous Diseases of the Lungs," Dr. Charles B. Ward, Spokane.

Dr. R. J. Skaife gave a report on the meeting of County Health Officers, which was held Sept. 15 at the Olympic Hotel, Seattle.

Dr. Edgar N. Layton gave a report of the meeting of Washington State Medical Association held at Seattle.

#### PUGET SOUND ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

The Puget Sound Academy of Ophthalmology and Oto-Laryngology held its first meeting of the year on September 15 at 8:30 p. m. at the Virginia Mason Hospital, Seattle, Wash., Dr. J. S. Davies, president, presiding. Minutes of the last meeting were read and approved.

The paper of the evening, "The Value of the Granger Line in the Diagnosis of Disease of the Sphenoid Sinus," was read by Dr. C. E. Koenig. There is so much merit in the Granger technic of demonstrating normal and pathologic sphenoidal sinuses that more general use should be made of this new method of roentgenographic examination. The head is held in the 107 degree angle and an x-ray exposure made anteroposteriorly. Uniform x-ray plates cannot very well be produced so long as the nose is used as one of the points upon which the head rests during the exposure. When the glabella and that portion of the alveolar process immediately below the nose are to be used, all x-ray plates are strikingly uniform. In the 107 degree angle the glabella-alveolar position, a considerable portion of the sphenoid shadow is thrown well above the ethmoid shadow. A semicircular line forms the upper boundary of this shadow. This is known as the Granger line. This line is clearly depicted upon a plate when the sphenoidal sinuses are free of pathology while, on the other hand, if indistinct or obliterated the existence of pathology is made quite certain.

Dr. Klemptner reported a case of round-cell sarcoma. The patient first noticed impaired breathing with the right nostril three months ago and swelling of the left cheek. Left middle turbinate was a large smooth mass. Tumor removed August 14. It filled the antrum and destroyed the anterior wall and ethmoid cells. Radium was applied. So far no recurrence. Specimen exhibited.

Dr. Wurdeman exhibited drawings of the macula lutea from actual cases. These are illustrations for a commentary volume for Dr. Jackson.

Nineteen members were present, three visitors.

## BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

**Allergy, Asthma, Hay Fever, Urticaria and Allied Manifestations of Reaction.** By William W. Duke, Ph. B., M. D., Kansas City, Mo. 75 illustrations. Cloth. 339 pp. \$5.50. C. V. Mosby Co., St Louis, 1925.

This is largely a clinical study of 500 private patients but the theoretical side is presented with laudable lucidity. For desensitizing sensitive patient's to therapeutic serum, the author advises Coca's method of giving 1/10 c.c. serum subcutaneously and increasing by this amount the dose each thirty minutes. It seems simpler to use Rosenow's method in most patients and inject first 1/2 c.c. of therapeutic serum under the skin and, after one or two hours, the full dose of serum may be given intravenously or intramuscularly. This small dose of serum will desensitize sensitive patients, or in those

especially sensitive to horse serum it will give a reaction that would contraindicate the use of serum altogether. Under symptoms of serum disease the occurrence of vomiting and neuralgias is not noted but is often very prominent. The reviewer has observed such 'sciatica in many patients that sitting became impossible.

It is interesting to note, apropos of the axiom that there is "nothing new under the sun," that one William Blackley, a physician of England in 1856, made the most painstaking and accurate observations on pollen in relation to hay fever and stated that it was not only the cause but that the severity depended upon the number of pollen grains in the air.

The author finds that allergy is not confined to specific proteins or antigens but persons may be made sensitive to even inorganic salts and to light and heat. Patients react more often to orris than to any other sensitizing substance, except pollen. Some patients may be made specifically hypersensitive to some kinds of smoke. Specific reactions occur from dust but depend largely upon the special components in dust.

The writer does not find that food skin tests are satisfactory but that trial by ingestion is more successful. Also food sensitiveness is less constant and permanent than that from pollen. Treatment is unwise for food sensitiveness unless in the case of wheat, milk and eggs, when it should consist of giving these foods by the mouth in the form in which they cause symptoms. Similia similibus curantur. Sensitizing foods may be organic, inorganic, protein or non-protein. Some cause symptoms when they reach the gastric mucosa, others only after digestion and absorption. Nasal reaction may occur at once, due to a volatile substance escaping from the food during mastication.

Sensitization to drugs is noted and the fact that aspirin can usually be given in  $\frac{1}{2}$  ounce doses in twenty-four hours to most people, while some react to minute doses and attribute the effects to heart failure, whereas it is due to specific sensitization and not to the physiologic effects of the drug. The same applies to novocain, as may be seen in occasional collapse after the use of small amounts for nerve block, and in its effects in causing most severe dermatitis of the hands in dentists who spill minute amounts on their hands during injections. The extraordinary feature lies in the fact that dentists may be careless for years and suddenly become hypersensitive and develop most severe inflammation of their hands. This applies also to the use of many other agents, as "hypo" solution and formalin. Occasionally there is a hypersensitiveness to salvarsan but this is more often due to impure water (foreign proteids). Drug sensitiveness can usually be discovered by skin tests.

Duke doubts that allergy arises from chronic infections and he gets unsatisfactory skin tests with bacterial proteins. Asthma and hay fever, he believes, are caused directly from swelling of the nasal and bronchial mucous membranes in acute respiratory infections. The author states that testing blood for incompatibility is not enough in trans-

fusion but one should give 5 c.c. of the donor's blood intravenously to the patient and, if no untoward symptoms arise, go on with the transfusion. This gives rise to the query, may not one individual be sensitive to intimate contact with another, as one person may react extraordinarily to the blood of another, or that humans may react to contact with animals.

The relation of chronic nasal and sinus infections to asthma and hay fever is not a causative one but the reverse, according to the author. He considers that chronic allergic reaction in the nose leads to edema and favors infection, sinus trouble and polyps, especially in the presence of deviated septum. Thus polyps and sinus infection would be secondary to hay fever and asthma. The corollary follows that surgical treatment of these conditions often gives no relief. Duke affirms that surgery should be a last resort, and remarks that there are few instances "in which careful, thoughtful surgical work can do as little good or as much harm." Space does not permit us to note the various clinical manifestations of allergic reactions but the reviewer has never read a more engrossing or convincing account of a great variety of disorders which are occurring constantly but are wrongly diagnosed. This will strike any physician who considers puzzling cases in retrospect.

In the matter of skin and other tests one is struck with the sketchy and inadequate knowledge that most of us have in regard to this subject. The reasons for the failure to derive any correct inferences from ordinary skin tests are readily seen. Scarcely 25 per cent of perennial allergic cases can be diagnosed by skin tests alone. Detective work in questioning patients is most valuable in diagnosis as to habits, food, occupation, place and time of attacks. It is shown that positive skin tests do not mean that the patient is clinically sensitive to all the materials giving such tests and, conversely, that negative tests do not rule out the materials tested as causes of allergy.

Diagnosis is based on the apparent finding of a specific causative agent, removal of it with relief of symptoms, and reproduction of the disease by exposing the patient to the suspected substance. The discussion of treatment is sensible and illuminating, especially the use of adrenalin and of foreign proteid, or non-specific therapy, for which the author uses colon vaccine.

But perhaps the most instructive and surprising chapters are those on physical allergy, or hypersensitiveness to physical agents, as light, heat, cold and mechanical irritation. For instance, cases of urticaria, asthma and hay fever are very commonly caused by skin contact or exposure to heat and cold, and Duke tests all his patients with heat and cold, exposure to actinic ray and diathermy current. Sometimes the reaction affects deeper structures than the skin and is more inflammatory in character.

Persons with a family history of allergy, hives, hay fever and asthma do not react to pollen or food, but do react to heat, cold and light, to which they

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are hypersensitive. They suffer from hives, erythema or hay fever, asthma, angioneurotic edema, abdominal pain on swallowing cold drinks, and diarrhea after the use of hot drinks or food, and from shock caused by heat. Asthma and hay fever may arise in such persons through exposure to heat or cold, or from the production of body heat by exercise or emotions. The knowledge of physical allergy is of great value and accurate for many hitherto inexplicable facts concerning allergic diseases. It often explains why asthma attacks a patient at a certain hour, and may account wholly for hay fever and asthma seizures.

The work, as a whole, is of great value and interest and affords much light on the general failure of skin tests and dissatisfaction with them. The author is an able clinician and deserves high praise for his indefatigable and ingenious methods of investigating this highly complicated but entrancing subject. The reviewer has not read any medical book for a long time that has afforded so much of interest and practical value.

WINSLOW

**The Iconography of Andreas Vesalius.** By M. H. Spielmann, F. S. A., Chevalier de l'Ordre de Leopold, etc. Cloth. 243 pp. 68 plates. 12 illustrations. London: John Bale, Sons & Danielsson, Ltd., London, Eng. 1925 (From the Wellcome Historical Medical Museum. Research Studies in Medical History.)

This volume is the outgrowth of a movement which started in 1912 at the University of Brussels, and which received the patronage of the Belgian government to celebrate in 1914 the fourth centenary of the birth of the "Father of Modern Anatomy," Andreas Vesalius. A Memorial Book, the product of the collaboration of leading scholars in Belgium and treating of Vesalius from the biographic, scientific and historical aspect, was to be a permanent commemoration of this event. Unfortunately, the war disrupted the plans before any portion of the work had been completed, except that dealing of *The Iconography of Andreas Vesalius*.

This is now published under the auspices of the Wellcome Historical Medical Museum, and readers and students of medical history will welcome this authoritative, exhaustive and beautiful treatise on the portraiture (paintings in oil, engravings, sculpture and medals) of Vesalius. The book has a definite extrinsic value as a reference work in the field of art. The reproductions are beautiful and the discussions and comments have many points of historical and literary interest.

HEPLER

**The Medical Follies.** By Morris Fishbein, M. D., Editor of the *Journal of the American Medical Association*. 223 pp. Boni and Liveright, New York. 1925.

This fascinating volume presents an analysis of the foibles of some health cults, beginning with Elisha Perkins, who functioned in the latter part of the eighteenth century, and including the popular medical delusions of the present day. No cultist of the present century had anything on Elisha for capturing the imagination of the public. His unscientific principles seem to have deceived many scientists of the day, who believed that he drew diseases

from the body with his metallic tractors. In time the bottom fell out of the structure and it collapsed in a day. The rise and fall of homeopathy is interestingly portrayed. It reached its zenith in the early 80's and began a rapid decline with the publicity regarding the medical colleges of our country, which was inaugurated some twenty years ago. The weak foundation on which osteopathy was founded is clearly presented, as well as the monumental ignorance displayed by the devotees of its side partner, chiropractic. No one with a vein of humor in his constitution could place confidence in this latter cult after reading this expose. Perhaps the most astounding quackery of all was that developed by Abrams. He differs from the two previous specimens of delusions by being a man of recognized education and scientific attainments. Apparently, he became enmeshed in the lure for gold which fell into his coffers after his exploitation of his Pandora's box. Suitable attention is paid to the cults of rejuvenation, physical culture and the popularity of the "strong man." This volume deserves a wide circulation among the laity, as it presents information which everyone should read who either acquires disease or thinks himself sick.

**Eye, Ear, Nose and Throat Manual for Nurses.** By Roy H. Parkinson, M. D., Visiting Oculist and Aurist to St. Joseph's Hospital, San Francisco, Calif. Illustrated. 207 pp. \$2.25. C. V. Mosby Co., St. Louis, 1925.

The author gives as the reason for this manual the fact that there is no book available for classroom work that can be used in the nurses' training school. Technical discussions are omitted, as belonging to the realm of the specialist. Consideration of each organ begins with the essential facts of its anatomy. The common diseases are briefly discussed, with sufficient detail to form the basis of diagnosis. Treatment is not considered. Several chapters are devoted to operating-room technic, and there is a final presentation of problems of the public health nurse and her relation to the specialities under consideration. The book contains much of value for the work of the nurse.

**Personal and Community Health.** By Clair Elsmere Turner, Associate Professor of Biology and Public Health in Massachusetts Institute of Technology. 426 pp. \$2.50. C. V. Mosby Co., St. Louis. 1925.

As stated by the author, this volume presents little discussion of anatomy and description of body function. Under personal hygiene are presented the facts of healthful living and the principles on which these rest. Public health is considered from the standpoint of what one, not a sanitarian, needs to know for family protection and responsibility as a citizen. There are chapters on hygiene of the central nervous system, of reproduction and of the mouth. Facts regarding community health are discussed relative to immunity, communicable diseases, water supply, waste disposal and kindred subjects. In a volume of this size none of these topics can be considered in great detail. Principles are presented, however, which convey much information to one unfamiliar with this line of study.

# NORTHWEST MEDICINE

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and Pacific Northwest Medical Association

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## ADDRESS

### MEDICINE IN IDAHO

CASPER W. POND, M.D.

POCATELLO, IDA.

The constitution of this organization specifically states that the president shall deliver an address annually. If it were not for this and the fact that I have so many things I want to say, I should desist at this time. I feel like a thief when I take your time, in view of the fact that we have so much good talent present.

The history of medicine in Idaho is the history of this State Association. This is our thirty-third annual meeting. During all this three score and more, until the past few years, we have met annually. We have had a program and we have elected officers for the ensuing year; then we have gone our several ways, lapsed back into almost complete narcosis for the next three hundred and sixty-three days, only to be aroused again by another notice from the secretary that another annual was coming off, and please be there and bring your program. So this process has been repeated all down through the years.

Any state association in Idaho has its difficulties. There are two main ones: (1) the peculiar topography of the state, its long pan-handle and inacces-

sible routes of travel from the north to the south, and (2) its small cities. When the towns and cities are small, men do more general work and hence it is much more difficult to get away from home. If we had larger cities, we would have more men tending toward specialism, with the result of more regular hours and more thought for organization. However, we must overcome these difficulties and make these long distances joyous vacations and our meetings scientific feasts.

I am glad to report tonight that we are beginning to make some progress in this line. Two years ago a new constitution and by-laws were adopted. This gave us a House of Delegates, through which the component societies could speak. This has made it possible for local problems to be brought up before the whole and thus a step forward in the line of medical organization. Out of the members of this society the Idaho Public Health League was formed. This, as you all know, was primarily organized to take care of the interests of the physician outside of his own practice, the legislative, the publicity and the protective side of a practice.

I am proud to be able to state that the Public Health League has actually functioned under the very able leadership of our executive secretary, Mr. Paul Davis. Sometimes I worry a bit about this League, when I learn that men are neglecting their dues and some of them, even more than this, are actually taking the opposing side against the League's activities. I would ask you to run over the

\* President's Address, read before the Thirty-third Annual Meeting of Idaho State Medical Association, Pocatello, Ida., Sept. 3-5, 1925.

things the League has actually done. Here are a few of the big ones:

The League is now ending its fourth year. We have never lost a legislative fight. It defeated the osteopaths in the last legislature on one of the most clever bills ever introduced in the history of medicine. It defeated the State Industrial Accident Board, when it attempted to put through a camouflaged bill to penalize the physicians of the state. It put through the Small Claims Court Law. It has been securing thousands upon thousands of dollars in contested claims before the State Insurance Fund. It started a Federal investigation of the Abram's machine. It has initiated numerous suits against quacks in the courts, and it will put out of business over two hundred quacks, when we put in operation our new doctors' bill. This bill has attracted national attention. It has distributed hundreds of thousands of pamphlets pertaining to scientific medicine. It has secured the almost unanimous support of all newspapers in the state. It has rendered personal service to all physicians in the way of preventing the revocation of their licenses for nonpayment of the renewal fee, also narcotic licenses. These and many other things have been accomplished, being too numerous to mention in a short paper. Mr. Davis will gladly, upon request, furnish you more if you so desire.

The time is here when we, as the medical profession, can no longer disregard our legal interests. As time goes on, the profession gets larger and problems get more intricate. We are attacked by more and greater opposing forces until, finally, if we do not take care of our own interests, I should like to know who will. As sure as we neglect the legislation for and the insurance against our practice, just so sure we will come to grief. You will note in the above list of accomplishments that, if our interests had not been protected, we would now be practicing in the same institutions as the most vicious of the cults. We would have no publicity through the legitimate press and we would be worried and harrassed until it would be difficult indeed to practice medicine in Idaho. We have one of the best men in the nation as head of our League. We know this because a great many larger states have offered him greater wages to do the same thing for them that he is doing for us. Let me urge you with all my heart not to let this organization die. Keep on paying your dues and those of you who can afford, pay more. Make yourselves committees of one to get new members and stimulate the old ones to more enthusiasm.

Through the untiring efforts of Secretary Dr. J. N. Davis, component societies have been formed, ten or twelve in number, until it is now possible for all men in the state to belong to either a county or district society and, therefore, automatically belong to the State Association. We, as your officers, feel that even though slow, some material progress has actually been made by the association. But we need more than this. We need more money in the way of annual dues. There is a great variety of things we could do for our membership, if we had more capital. I think there is no society that can function and actually accomplish things worth while without money to pay the necessary expenses thereof.

We need more publicity. The things we do, the good we accomplish should be published in our official journal. If we look through the pages of *NORTHWEST MEDICINE*, we see Oregon, we see Washington, Montana, etc., but our own state is always conspicuous by the fact that it is not there. Let me urge the secretaries of all these component societies to formulate a short review of their programs or minutes, and submit this to the editor of our journal. Then, and not until then, will we let other states know what we are doing. This is perfectly ethical and legitimate and we need it badly.

We need postgraduate work brought to our doors. I note that some of the other states are doing this by employing some of the best teachers in the land to go from one city to another, giving clinics in a well equipped car or train. It is too expensive to visit the medical centers as often as we should. I venture to say that it costs as much for one man to go East and take a few months postgraduate work, as it has cost us to bring all this excellent talent to our own doors.

We are somewhat disappointed that a representative of the A. M. A. is not present. This was unavoidable, however. I feel that at some future time the societies in the state and nation will work out more feasible plans for actually helping the small state society. If we will keep abreast of the times, we must seek out the newer things in medicine and march along with whatever progress there is.

We need to stand together and help our fellow practitioner. No doubt you have all noticed that, during the past few years, malpractice suits have increased by such leaps and bounds that insurance companies have very materially increased the rate on our policies. There must be a reason for this. Probably the fact that we have so many specialties,

so many laboratories, x-ray, clinical and what not, that the patient expects a great deal more than formerly. It may be because the patient and his relatives feel that, due to his appearance, the doctor has lots of money, and that probably a malpractice suit will take some of it away from him. I am thoroughly convinced that at least a great majority of these suits are started by the physician.

This is what happens. A patient, who has been operated upon or who has been ill, calls to see Dr. A. The doctor looks at the bottle of medicine given by another physician and asks: "Who gave you that?" The patient says: "Dr. B." A mere shake of the head or "too bad that has been given" is all that is needed to put dissatisfaction and distrust in the patient's mind. He immediately resolves to do something to make Dr. A atone because Dr. B., one of his own profession, said he had done a wrong. The same may happen from a fracture. Maybe the result is poor, but are you the judge? Have you done surgery? If you have, you know the many difficulties encountered. Would you like to have Dr. B. say this about you, Dr. A.? I am not in a position to judge results unless I know *all* the circumstances. But the saddest thing of all is the actual suffering we cause the patient. If a part has been removed and is gone, and cannot be replaced, do we help the sufferer by railing against the one who was unfortunate enough to do it or to have it happen in his practice? Do you want another physician to say these things about you? I feel sure you do not. I should like to get away from the popular thought that men in the medical profession are not friendly toward each other. We should be. We can be.

Three years ago Dr. F. H. Landenberger, of Salt Lake City, at that time President of the Utah Association, talked along this line. As he concluded, he asked the members to arise and take the following oath: "On my honor I will do my best to protect every member of the Utah State Medical Association against malpractice suits."

I am going to ask you to do the same thing. If you will kindly stand and raise your right hand. Gentlemen, I thank you.

Somewhere out there in the distance marches the future of medicine. There goes the periodic health examination. There goes state medicine. There go the specialties, with all their fine budding, branching twigs. There goes prevention instead of cure. Members of this association, we must stand together and step into the parade, if we are to be considered among the good and the great.

## ORIGINAL CONTRIBUTIONS

### THE ACHLORHYDRIA FAMILY TREE OF DISEASES\*

HENRY A. CHRISTIAN, M.D.

BOSTON, MASS.

In medicine, when the etiology of a disease is known, the descriptive plan usually followed is to group under the etiologic heading a very large variety of clinical conditions, having the known cause as the one common factor but otherwise often differing very much from each other. Under this general heading of etiology there is a certain degree of subdivision into clinical entities, but this subdivision is relatively unimportant and not carried very far. The discovery of a cause, such as the tubercle bacillus or the spirocheta pallida, in each instance has allowed of bringing together conditions previously regarded as having but little relation to each other. The ability to do this has permitted a great advance in our understanding of these diseases of known etiology, because it has facilitated diagnosis and improved methods of treatment, which after all are the most important ends of medical knowledge.

However, there are very many diseases whose etiology, in the sense of a single dominant causative factor, is quite unknown. With these the descriptive process largely has been one of division, and further subdivision, into what we term clinical entities, using major differences and minor similarities in large part as criteria of grouping. To a considerable extent we utilize our knowledge of function of organs in this grouping but it is rare to adhere strictly to any one basis of grouping in our descriptive classifications. Rather do we mingle criteria of function, of partially understood etiology, of structure, and of symptomatology and clinical findings in our plans of classification, until such a time as we discover the definite etiology. This descriptive process has helped greatly in our understanding of disease and has been an important factor in our advance in medicine, but it is to be regarded only as a somewhat unsatisfactory substitute for grouping based on etiology.

On the other hand, it is helpful periodically to examine and regroup diseases from the viewpoint of common similarities that run through them and thereby get, perhaps, a somewhat different concep-

\* Read before the Thirty-sixth Annual Meeting of Washington State Medical Association, Seattle, Wash., Sept. 17-19, 1925.

tion of them. Possibly some of these diseases with a common factor may turn out to have a single dominant cause, when, at last, their etiology is found out. It is with some such idea as this that I have grown interested in the similarities that exist in some diseases of undiscovered etiology.

Take for example such diseases, so diametrically opposite in their chief features, as pernicious anemia and polycythemia and see how much alike they are in their important symptoms. If one takes the descriptive terms used by an author for one of these diseases and compares them with the terms used by another author in his description of the other disease, it is most surprising how alike they are, suggesting that either too many or too few red blood corpuscles can produce quite identical disturbances in the patient's feelings. This fact alone causes one to pause and ponder from a different point of view as to function of red cells and as to the underlying cause of these two conditions. Let me place before you in parallel columns the descriptive terms, used independently by different authors, in a recent system of medicine in describing pernicious anemia and polycythemia, using their own words for the various symptoms.

## SYMPTOMATOLOGY

<i>Polycythemia</i>	<i>Pernicious Anemia</i>
General weakness.	General weakness.
Lassitude	Muscular weakness.
Loss of weight.	Considerable loss of weight in 40 per cent.
Shortness of breath on exertion.	Dyspnea.
Ease of fatigue.	Abnormal fatigue.
Somnolence.	Somnolence.
Paresthesias	Paresthesias.
Pain in legs (may occur).	Pain in legs (rather rare)
Loss of appetite.	Loss of appetite.
Sense of fulness in stomach.	Sense of fulness in stomach.
Vomiting.	Vomiting.
Constipation.	Constipation alone or alternating with diarrhea.
Blurring of vision.	Defects of sight are fairly common.
Specks before eyes.	
Irritability.	Any form of psychic alteration from mildest types to most intense.
Depression.	
Poor memory.	

Furthermore, I have seen polycythemic patients with histories so closely like the history of a pernicious anemia patient that I am sure anyone hearing the history would be completely surprised, when the patient was presented, having expected to see a pale, not a rubicund patient.

Does this similarity of symptoms indicate any fundamental identity in these diseases or is it merely

a matter of coincidence? If one pursues this idea of similarity in the two diseases just mentioned, one should not be surprised to find cases which, beginning with the blood picture of polycythemia, eventually change to that of pernicious anemia. Such cases have been observed and I will return later to this topic.

Were I asked to name the feature that I have found most constantly present in pernicious anemia, it would not be, as one might naturally expect, the anemia but the absence of free hydrochloric acid in the gastric juice. In my own cases achlorhydria has been present in practically all patients with pernicious anemia, and the figures of all observers show a very high percentage of incidence of achlorhydria. The achlorhydria persists during remissions of the disease. On the other hand, all know that during remissions anemia may disappear and the blood become practically normal in appearance, and that in certain stages of the disease the anemia is relatively unimportant. Moreover, achlorhydria frequently is found to exist prior to the development of anemia or any of its symptoms. In my own cases of pernicious it has always been found when the patient was first examined, and in two patients it was noted five years before there were any things suggestive of pernicious anemia. Apparently it is not a condition that appears as the anemia progresses and certainly it is not a late manifestation of the disease.

Some regard achlorhydria as a congenital defect in the individual; others consider it as an acquired defect; it does not seem to most to be much more than an anomaly. Certainly it may be present in persons free from any symptoms. To one group of observers the achlorhydria is a necessary underlying condition without which the real cause of pernicious anemia could not be effective; to another group the achlorhydria in itself is the main causative factor of the disease. Whatever view one holds in regard to the achlorhydria, its very constant presence in pernicious anemia cannot be without significance and it invites comparison with other conditions in which achlorhydria is found. This has led me to review in a comparative way certain diseases in which achlorhydria is found and to group them on the basis of this and some other changes that are very commonly present or absent in pernicious anemia. This can be done in the following schematic way which invites comparison between certain somewhat related conditions.

(1) <b>PERNICIOUS ANEMIA</b> (familial) Achlorhydria Periodic sore tongue Spinal cord changes Blood changes (anemic) Gastrointestinal symptoms.	(2) <b>SECONDARY ANEMIA</b> Free hydrochloric acid in gastric juice No periodic sore tongue No spinal cord changes Blood changes (anemic) No gastrointestinal symptoms.	(3) <b>POLYCYTHEMIA VERA</b> (familial) Achlorhydria (unusual) Rare periodic sore tongue Rare spinal cord changes Blood changes (anemic) Blood Changes (polycythemic)
(4) <b>SPRUE</b> Achlorhydria Periodic sore tongue Gastrointestinal symptoms Blood changes (anemic) Spinal cord changes	(5) <b>PELLAGRA</b> Periodic sore tongue Gastrointestinal symptoms Mental symptoms.	(6) <b>SUBACUTE COMBINED SCLEROSIS</b> Achlorhydria Blood changes (anemic)
(7) <b>MULTIPLE SCLEROSIS</b> Free hydrochloric acid in gastric juice Blood changes (absent or slight anemia)	(8) <b>GASTRECTOMY</b> Achlorhydria Blood changes (anemic)	(9) <b>PERIODIC SORE TONGUE</b> Achlorhydria

If one enlarges on the various features of these several diseases as outlined in the above schematic outlines, certain interesting features and relationships come out.

Evidently pernicious anemia and sprue are very closely related, so much so that a patient may be diagnosed sprue by investigators interested in that disease and a short time thereafter, in another clinic interested in pernicious anemia, the same patient may be considered as entirely typical of that disease. Again, a patient may be considered as having sprue and a few years later will appear again in the office of the same physician with changes so characteristic of pernicious anemia as to lead to a possible change in diagnosis from sprue to pernicious anemia.

Various questions arise in this connection. Are they identical diseases, in which climate determines the prominent features of each? It is a striking fact that sprue, i.e., a disease with a characteristic form of sore tongue and diarrhea, occurs as a frequent malady in the tropics, where the diagnosis of pernicious anemia is rarely made, while in the northern part of the United States and elsewhere in the same latitude pernicious anemia is often seen, but the "sprue" type of diarrhea does not seem to occur indigenously. Some of my colleagues in the upper southern states tell me that with them both conditions are commonly seen.

Investigations of etiology again raise the question of identity. Ashford in Porto Rico is confident that monilia psilosis is the cause of sprue and a constant finding. Wood in North Carolina finds monilia psilosis regularly in typical pernicious anemia cases as well as in those with the symptomatology of sprue. Lawrence Smith has isolated monilia psilosis from pernicious anemia patients in Boston and thinks the organism identical with the one he found in sprue cases in the Philippine Islands.

This, of course, suggests that the two are different manifestations of the same disease in the same way, for example, that tabes dorsalis and syphilis of the stomach are the results of different localizations and pathologic results of the spirocheta pallida.

However, if we turn to our scheme, we see that in pernicious anemia achlorhydria precedes the other changes, while in sprue it develops after those symptoms, considered characteristic of the disease, are full blown. Should this be considered a differential point justifying considering these in the way that is generally done, as two distinct diseases, unrelated to each other? On the other hand, might not one say that in each the same cause is working and that the absence of free hydrochloric acid in the gastric juice determines in what we call pernicious anemia the early anemia, while in sprue the free hydrochloric acid persists until the cause of sprue produces atrophy of the gastric mucosa with secondary achlorhydria, after which the anemia appears? At any rate, this is apparently the sequence in sprue. All of these are interesting questions which need to be solved before we fully understand these two diseases. Whatever final answer we give to these questions, it is evident that close and important relationships do exist between pernicious anemia and sprue, and that such comparisons as the above on the basis of similarities throw light on both conditions.

But how about the spinal cord changes? These appear with great frequency in pernicious anemia. Often they are early symptoms and at times seem to antedate the anemia. In sprue spinal cord changes are infrequent and seem to develop in the later stages. Again, what relationship exists between the cord changes and the achlorhydria? Is it that the achlorhydria is a necessary antecedent to the spinal cord changes, as it has seemed to be to the anemia in these two conditions?

With a quite definite pathologic lesion of the cord with characteristic symptomatology, known as subacute combined sclerosis, quite regularly there is achlorhydria even without any anemia. This is so regularly found that it is regarded as an important diagnostic point from certain other central nervous system diseases, in which symptomatology may be essentially the same. For example, according to some, multiple sclerosis of the spinal type should be diagnosed, if free hydrochloric is found in the gastric juice, a diagnosis which becomes improbable if it is absent. Certainly it is a curious fact that a central nervous system disease so commonly takes a particular form, if there is an antecedent or coincident achlorhydria, and that it is rare to find this pathologic lesion of the spinal cord without the presence of achlorhydria. This certainly suggests some close relationship between the achlorhydria and the spinal cord lesion.

To revert to polycythemia in relation to pernicious anemia, it is an interesting thing that some patients with polycythemia undergo a gradual transition to the appearance of pernicious anemia, so far as the blood picture is concerned. Does achlorhydria play any part in this change? In a small group of my own cases of polycythemia, in which gastric analysis was done, free hydrochloric acid was present; in one of these it was very small in amount. In one of my patients with polycythemia there was a history of occasional canker sores on the tongue. Seven and a half years later this patient came under the care of one of my colleagues with a sore tongue, showing some atrophy of the papillæ, a condition much resembling what one so commonly sees in pernicious anemia. He found free hydrochloric acid absent from the gastric juice of this patient; the red cell count was still above normal. Perhaps this is a patient in transition from polycythemia to pernicious anemia. As to reported patients showing this transition, I do not know the findings in their gastric juice, but it is possible that they had achlorhydria and this factor was responsible in some way for the development of anemia.

That achlorhydria may be an important factor in the production of anemia is shown by the development of severe anemia of the pernicious anemia type after gastrectomy. Several such cases have been reported. Gastrectomy, among other changes, causes an immediate achlorhydria; it is in a sense an experimental achlorhydria in man. That, in the relatively few cases that survive the operation for a year or more, anemia develops quite frequently,

is a striking thing, suggesting a casual relationship of some sort.

I have observed several patients, whose complaint was a repetition of sore tongue with recurring vesicles and shallow ulceration on the mucous membrane of the mouth, including that of the tongue. Achlorhydria coexisted in several of these patients and this, with the changes in the mouth, were the only demonstrable departures from the normal that we could make out in a very thorough study of these patients. The sore mouth had been a disturbing feature for many years but these patients had no anemia, no spinal cord lesions and no gastrointestinal symptoms. In these patients the relationship is not at all clear to me but one might surmise that in time in these patients other disturbances, already pointed out as associated with achlorhydria, might develop.

From what has been said already, it is evident that there are a number of conditions that can be said to be related to each other on the basis of the presence of achlorhydria. In this sense they constitute a family group or family tree of diseases. Beginning with achlorhydria there may be no symptoms or there may be gastric indigestion, sore mouth, diarrhea, anemia or subacute combined sclerosis of the spinal cord. From certain statistics obtained from gastric analysis in apparently normal individuals, it has been estimated that about 4 per cent of normal individuals have achlorhydria. It may be said that, of these, a certain percentage, estimated by Hurst as 16 per cent, will develop pernicious anemia with all of its characteristic disturbances, while others will in time show the symptomatology of other of the disturbances described above. Others will develop none of these symptoms. Achlorhydria seems definitely to have a familial relationship and so familial characteristics should be anticipated in these several conditions. Certainly it is, at times, very definite in pernicious anemia as has been pointed out by a number of observers. It is also noted in polycythemia, though I do not know that there is any achlorhydria in these particular patients.

Having in mind the above observations, very naturally one gets the idea that achlorhydria, even though it is unaccompanied by any symptoms, is potentially evil and should be corrected by the daily administration of dilute hydrochloric acid. Whether by so doing one could prevent the subsequent development of the diseases associated with achlorhydria is a matter for trial. Since a considerable number of individuals are known to show achlorhy-

dria and without the ingestion of hydrochloric acid fail to develop these diseases, the results on a small group of patients with achlorhydria would be of little significance. However, as these diseases, once they develop, are practically always progressive to a fairly early death and since, with all of our talk about preventive medicine, we have so few means of preventing the chronic diseases which take the largest toll of life, the giving of daily doses of hydrochloric acid to a large number of achlorhydria individuals deserves a prolonged trial to see whether we can prevent the subsequent development of pernicious anemia, subacute combined degeneration of the spinal cord, etc.

In this connection it is well to remember that it will be necessary to give large quantities of dilute hydrochloric acid at frequent intervals to imitate the normal secretion of hydrochloric acid in the stomach. (Hurst recommends 25 c.c. of dilute hydrochloric acid per day in treating pernicious anemia.) My own failure to prevent pernicious anemia in one patient may have been due to giving too little hydrochloric acid. This was an interesting, even though accidental, experiment.

In 1914 a woman of middle age presented herself complaining of diarrhea of two years' duration. Since 1912 she had had frequent bowel movements, for much of the time as many as six to ten movements per day. She was found to have achlorhydria. Dilute hydrochloric acid was suggested as a means of curing the diarrhea. It was an entirely successful therapeutic measure for the diarrhea, for on a dosage of 2 c. c. twenty and forty minutes after each meal the diarrhea disappeared. She continued to take the hydrochloric acid and remained free from diarrhea until 1916, when she developed anemia with all the characteristics of pernicious anemia, from which she died in 1919.

This failure should by no means discourage a trial on a large scale of the experiment in preventive medicine which I have just suggested. Perhaps one of our newly developed schools of public health might be willing to undertake the experiment. Certainly even a remote possibility of the prevention of pernicious anemia deserves a thorough critical test, even though considerable expenditure over a long period of time is involved.

It has seemed to me of interest to consider these diseases from the viewpoint of a common factor, the achlorhydria. Others have discussed the relationship of the achlorhydria. By elaborating this same idea I myself have learned some things about this group of diseases which I did not appreciate before. I have an idea that in the achlorhydria may be found to exist a significant factor in their cause, though probably not the chief cause. If this is

true, some ideas which have been advanced of the etiology of pernicious anemia hardly seem tenable, while others have an increased probability.

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THE GASTROINTESTINAL SYMPTOMS OF NEUROSYPHILIS. A study has been made by Maurice Fremont-Smith and James B. Ayer, Boston (Journal A. M. A., Oct. 24, 1925), of fifty cases of neurosyphilis in which gastrointestinal symptoms were prominent. All the patients were suffering from a late degenerative type of the disease, the majority showing evidence of *tabes dorsalis*. The symptoms for the most part were gastric in type. Twenty-six cases have been classified as frank gastric crisis, on the basis of acute attacks, beginning and ending abruptly and characterized by pain or vomiting, or both; fourteen cases presented less typical gastrointestinal symptoms, such as knife-like pains through the abdomen, or sporadic vomiting. In one case, intestinal spasm was apparently proved by operation. Two cases in which the predominant symptoms were rectal have been included. Eight further cases with probable intraabdominal pathologic conditions, in addition to neurosyphilis, are discussed. In this group of cases, twelve patients were operated on under mistaken diagnoses. In one recognized tabetic patient, a duodenal ulcer was allowed to perforate before the surgeon would consent to operate. A definite gastric pathologic condition was proved by operation or indisputable roentgen ray evidence in five cases; ulcer, in four; cancer in one (figures corresponding with those reported by Exner and Schwarzmann, who at necropsy found peptic ulcer in five and gastric carcinoma in three of seventy-five tabetic patients), and decision as to presence or absence of ulcer was not made in three cases. Two types of mistake in diagnosis are possible: *Tabes* may not be recognized and the symptoms attributed to an intraabdominal pathologic condition, or *tabes* only may be recognized, and an accompanying ulcer disregarded. While the usual mistake is the unwarranted diagnosis of ulcer or gallstones in the tabetic patient, the error may be reversed, and a coexistent ulcer in a neurosyphilitic patient may be ignored and even allowed to perforate before diagnosis is made. There are various degrees of gastrointestinal disturbances caused by neurosyphilis, ranging from crisis, on the one hand (characterized by sudden onset of epigastric pain or vomiting, or both), to the least forms of gastric disturbance, on the other. These minor forms present occasional vomiting, pains occurring in any part of the abdomen, or attacks of epigastric discomfort merely, with or without gaseous eructations. Other forms of gastrointestinal disturbance are constipation, diarrhea and rectal tenesmus. Such symptoms are too often treated by the physician without a suspicion that they may be due to neurosyphilis. Though crisis may be the first symptom, crisis is rare without some accompanying signs or symptoms of *tabes*. Of these, abnormalities in the pupils are the most constant. The authors wish to emphasize that a negative blood Wassermann reaction is of no significance in eliminating the possibility of neurosyphilis.

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END-RESULTS IN TREATMENT OF KNEE JOINT TUBERCULOSIS. Russel A. Hibbs and Herman L. von Lackum, New York (Journal A. M. A., Oct. 24, 1925), know of no method of making a diagnosis in knee joint tuberculosis except by aspiration, with guinea-pig inoculation, or by exploratory operation with tissue examination and guinea-pig inoculation. They state: Without a positive means of diagnosis, we are subjecting patients who do not have the disease to long periods of treatment, having our suspicions confirmed by the bone and muscle atrophy that appears as a result of the treatment.

## ECLAMPSIA\*

A SUMMARY OF ITS PRESENT DAY TREATMENT

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A great deal has been done during the last twelve or fifteen years to reduce the mortality due to eclampsia. This has been brought about by instituting efficient prenatal care in obstetric clinics and by the conservative treatment of eclampsia, as laid down by Tweedy of the Rotunda and Stroganoff of Leningrad.

Prevention should receive our first consideration. In the past too little attention has been given to prenatal care. It is only in recent years that medical schools and obstetric clinics have given due attention to the care of the pregnant woman and there are those who believe that eclampsia is wholly unnecessary, as claimed by Davis and Edgar. Their claim may not be wholly correct, but is nearly so. DeLee states in a recent Bulletin that, since prenatal care has been instituted in the Chicago Lying-In Dispensary, it is very rare that a case of eclampsia comes into the hospital from the district. Baughman of Richmond, Va., states that in all his years of obstetric experience, only two of his preeclamptics have gone into convulsions and that the record of the Virginia Medical School Clinic is nearly as good. Since the prenatal clinic at the University of Oregon Medical School was opened about three years ago, over 500 cases have been registered and not one case of eclampsia has developed in the clinic. We should have had three, as the ratio is about 1-175.

Lowering of the present mortality due to eclampsia will be slow, because it depends, first, upon the education of medical students and physicians as to what good prenatal care should be and, second, the education of the expectant mothers as to the importance of such care by the physicians.

Briefly stated, prenatal care for the prevention of eclampsia should consist of the following: The patient visits the physician's office early in pregnancy, at which time her history is obtained, special attention being paid to previous acute infections, especially scarlet fever and rheumatism; a complete physical examination is made, attention being given to infected teeth, tonsils and ulcers on the body; the blood pressure is recorded; urine is examined; instructions are given as to diet, exercise, etc. She is then asked to report every three weeks up to the

sixth month. At each visit the blood pressure is recorded and the urine is examined. The patient is instructed to report if she suffers from headache, disturbances of vision, swelling of feet, hands or face, dizziness or constipation.

During the last three months of pregnancy the patient is seen every two weeks, when the blood pressure is taken, the urine is examined and her general condition noted. If her blood pressure rises from normal to systolic 160 and there is a trace of albumin in the urine, with or without edema, she is put on a milk and carbohydrate diet and given an ounce of magnesium sulphate every morning. The amount of urine excreted is measured. If she does not improve, as indicated by a lowering of the blood pressure, a lessening of the edema and a clearing up of the albumin in the urine, she is put to bed and the treatment continued.

Most cases will improve and go on to term without further difficulty. If not, and the patient's condition becomes worse, as indicated by the blood pressure going higher, albumin increased, with casts in the urine, headaches becoming more severe, disturbance of vision, the important thing at this time is that her condition be taken seriously. There has always been an attitude on the part of most physicians and of the laity (and the physicians are to blame for that held by the laity) that the pregnant woman has some superresistance to disease. A non-pregnant woman with the symptoms mentioned would be considered very ill and the attending physician would give her the closest attention. This is not so when she is pregnant.

If the patient's condition remains more or less stationary, i.e., her blood pressure, systolic 160 to 180, diastolic 90 to 100, the urine unchanged, and if it is early in the viability of the child, then we temporize in the hope that the patient may be carried along, so that possibility of getting a child that will live will be increased. But if she has reached the eighth or eighth and a half month of pregnancy, we terminate it by induction. However, if her condition becomes worse, as indicated by twitching of muscles, disturbances of vision, vomiting, pain in the epigastrium, rising blood pressure, the pregnancy is terminated at once, regardless of the viability of the child.

The method of induction depends upon the individual case. If not too urgent, castor oil and quinine may be attempted. In a small percentage of cases this will be successful. Watson gives small doses of pituitrin in addition. This is not always

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certain in its action. As high as twenty doses of 3 mm. each by hypodermic are sometimes given without results. The use of one of the various bags is quite effective and is to be preferred in multiparas. McPherson advocates the use of a small rectal tube in the cervix and packing, reserving the bag for those cases in which the membranes have ruptured.

We believe for the primipara that the rectal tube or bougie with careful packing is preferable to bagging on account of the trauma that is done to the cervix of a primipara when a bag is introduced. In elderly primiparas near term, when it is very desirable to get a living child, I believe cesarean section is justifiable.

In the treatment of eclamptic convulsions we have what is known as the radical or surgical, and the conservative or medical, methods. Until 1891 accouchement force was the only method in use. At that time Dürsshen introduced abdominal hysterotomy and later vaginal hysterotomy. This method became very popular and spread rapidly over the world. Surgeons were much pleased with that method of delivery and that notion is still held by those who are unaware that the mortality has been reduced from 30 per cent, when operative means are used, to about 12 per cent by more conservative methods.

In 1897 Stroganoff of Leningrad and about 1903 Tweedy of Dublin began the conservative treatment of eclampsia. Their methods are almost diametrically opposed and yet each has about the same percentage of mortality. In addition are the methods of McPherson of New York, Williams of Johns Hopkins, and quite recently the use of magnesium sulphate, as reported by Lazard of Los Angeles, and the veratrum viride method. Gillespie of Cincinnati continues to advocate the use of veratrum viride in the form of veratone, a standardized product of this drug. He gives 60 minims hypodermically as an initial dose, followed by 15 minims every ten minutes until the patient has sighing respirations, free vomiting of bile and a pulse rate of 40 or 50 per minute. This drug in the hands of most men has been very unsatisfactory and its use has been largely discontinued.

In the February, 1925, edition of *American Journal of Obstetrics and Gynecology*, Lazard reports seventeen cases treated by the intravenous administration of magnesium sulphate with one maternal death, a rate of 5.8 per cent. The salt is given in doses of 10 c.c. to 25 c.c. of a 10 per cent solution intravenously. In one case reported, the patient

had seventeen convulsions and recovered. She received three 20 c.c. doses of a 10 per cent solution within six hours. In addition, the patient had gastric lavage and three ounces of magnesium sulphate was left in the stomach, together with colonic flushing of soda and glucose.

Lazard lays the foundation for the use of magnesium sulphate in the treatment of eclampsia on the experimental work of Meltzer and Auer, which had to do with the sedative action of magnesium sulphate in the control of tetanic convulsions, published in the *American Journal of Physiology*, October, 1905, and the *Medical Record* in 1906; also the work of Fisher on "Diagnosis, Prognosis and Treatment of Nephritis," published in the *Detroit Medical Journal*, June, 1916.

The danger to be feared in the use of the salt is its paralyzing effect on respiration. This is overcome by the intravenous administration of 10 c.c. of a 2.5 per cent solution of calcium chloride, which should always be in readiness.

If the theories of Meltzer, Auer and Fisher are correct, the use of magnesium sulphate intravenously should be highly valuable in the treatment of the nephritic type of eclampsia with symptoms of uremia, i.e., decreased output of urine, marked edema, retinal changes, vomiting, etc. Future reports on the use of this salt will be watched with much interest.

Wilson, reporting on comparative results of radical and conservative treatment at Johns Hopkins since 1912, shows that the mortality under conservative treatment as directed by Williams, has been reduced to 12.8 per cent, when previous to that time radical treatment was used with a gross maternal mortality of 22.7 per cent.

The regime at Johns Hopkins is summarized as follows:

1. Patients are placed in a quiet, darkened room and are disturbed as little as possible.
2. A hypodermic injection of one-fourth gr. of morphia is given at once. This may be repeated if indicated (particularly in the presence of undue restlessness or repeated convulsions), but not more than one-half grain is given in the first twenty-four hours.
3. The patient is kept turned on one side with the foot of the bed elevated as long as coma persists. Mucus is swabbed from the pharynx as it collects.
4. Venesection after the second convulsion performed under nitrous oxide anesthesia if necessary. One thousand c.c. of blood is withdrawn, unless the systolic blood pressure falls below 100 mm. or

the pulse rate shows alarming change during the process. (This is, of course, contraindicated in the presence of marked anemia.)

5. Water is given freely as desired, when conscious. Those who cannot drink on account of coma, are given 500 c.c. of 5 per cent glucose solution intravenously, which may be repeated in twelve hours.

6. A special nurse is in constant attendance until the patient is permanently out of coma.

7. No attempt is made at delivery until the cervix is fully dilated, unless some definite maternal indication apart from the eclamptic condition is present.

The results of the Johns Hopkins Clinic have been quite satisfactory, in spite of the danger of removing 1000 c.c. of blood with the prospect of losing more at the time of delivery.

McPherson, who follows the old Rotunda method of treatment, reports 107 cases with a mortality of 15.7 per cent. Excluding moribund cases, he has a corrected mortality of 9.3 per cent. His method is outlined as follows:

1. Patient is placed in a darkened room.
2. Blood pressure is taken and catheterized specimen of urine is obtained.
3. If blood pressure is over 175, phlebotomy is done until pressure is 150.
4. Gastric lavage: two ounces of castor oil is left in the stomach. Colonic irrigation of 5 gal. of a 5 per cent glucose solution.
5. Morphine sulphate one-half gr. on admission, followed by morphine one-fourth gr. every hour until the respirations drop to eight per minute. He states, "at this time convulsions have usually ceased; the patient will have fallen into labor and, as has happened in practically all our cases, will be delivered normally or by an easy low forceps in a short time."

The Rotunda method no longer uses morphine because of its inhibitory action on the intestinal secretions. Gastric lavage with a gallon of sodium bicarbonate, one drachm to the pint, one pint of the soda solution, with four ounces of mist. senna compound or three ounces of castor oil is left in the stomach. The bowel is first washed out with one or two quarts of soap solution; then a colonic irrigation is given with a No. 24 stomach tube passed into the bowel about eighteen inches, using five gallons of the sodium bicarbonate solution, one or two pints of soda solution, with four ounces of

purgative being left in the bowel. The bowel irrigation is repeated every five or six hours.

During convulsions the patient is placed on her side, a gag is kept between the teeth and mucus swabbed from the mouth. In case of respiratory failure, pressure is exerted upon the chest. As soon as possible, purgatives are given by mouth every six or eight hours until the toxemia disappears.

The patient receives no nourishment except water until there is a large secretion of urine. In cases having a profound coma with little or no edema and bloody urine, 30 to 40 ounces of sodium bicarbonate solution is given under the breasts, this being repeated every six to twelve hours. If delivery does not take place normally, nothing is done until the head is found to be in the vagina. It is then delivered by forceps. By using the above method, Tweedy has recently reported twenty-nine cases without a maternal death.

Professor Stroganoff, whose method of treatment has never gained favor in this country, largely on account of his use of chloroform and chloral, lays claim, after treating 823 cases by his older and what he calls his "newer improved prophylactic method," to the possibility of obtaining the following results in non-neglected cases, if his method is strictly adhered to: First, recovery of mothers from eclampsia 100 per cent; second, immediate cessation of convulsions in approximately 90 per cent of cases as soon as treatment is commenced.

Stander of the Johns Hopkins Clinic visited the Stroganoff Clinic early in 1924 and, after making an exhaustive study of Stroganoff's records, he was so impressed that in October of the same year there was adopted, at the Johns Hopkins Clinic, a regime quite similar to that of Stroganoff, except that chloroform is forbidden. This method may be best understood by giving the first twelve hours of a case report by Stroganoff, which is as follows:

The patient was immediately given chloroform (two drachms), for a period of ten minutes, after which the blood pressure was (11:35 a.m.) 138 systolic, 90 diastolic. As soon as the hypodermic injection could be prepared (11:45 a. m.) a third of a grain of morphia was given while the patient was under chloroform. Such a large dose, in comparison with that usually employed (gr. one-fourth), was administered partly because of the relative severity of this case and the strong constitution of the patient, but mainly on account of the impossibility of eliminating the noise of street traffic.

The case proceeded as follows:

11:55 a.m. Blood pressure unchanged, pulse rate 70, temperature 98.6.

12:00 m. Four and one-half ounces of urine removed by catheter under chloroform, 2½ drachms. Analysis of urine: acid, sp. gr. 1.024, solid albumin, no sugar, very many casts (granular); epithelial cells present, leucin and tyrosin absent.

12:15 p. m. Chloroform 45 minims.

12:25 p. m. Per rectum chloral hydrate, gr. 30, milk 2 oz., normal saline, 3¼ oz., under chloroform 20 m. (5 drachms total). Part of this was returned per anus in fifteen minutes. Therefore, at

1:25 p. m., per rectum chloral hydrate, gr. 15, milk 1 oz., normal saline 13 drachms, under chloroform 20 m.

2:25 p. m. Morphina one-fourth gr. subcutaneously, chloroform 30 m.

4:25 p. m. Per rectum under chloroform 45 m., chloral hydrate gr. 15, milk, 1 oz., normal saline 1½ oz.

6:25 p. m. Rectal injection repeated without chloroform. Blood pressure 154, temperature 98.4°, pulse rate, 70, sleeping.

9:45 p. m. Per rectum under chloroform (40 m.) chloral hydrate gr. 15, milk 1 oz., normal saline 1½ oz. Urine passed voluntarily, 6 oz. Patient moved under chloroform to another ward.

Chloroform, total 7 drachms. Total during first day: chloroform, 7 drachms; chloral hydrate 1½ drachms and morphia 7/12 gr.; urine 16½ oz.

Following day patient received: 2:00 a. m., chloral hydrate, 15 gr. by mouth; 5:35 a. m., chloral hydrate 15 gr. by rectum; 10:10 p. m., chloral hydrate 23 gr. by mouth, cascara 2 drachms.

The next day: 8:00 a. m. chloral hydrate, 23 gr., and during the following two days the patient received 68 gr. of chloral in doses of 15 to 23 gr.

It will be noted that Stroganoff uses chloroform to prevent convulsions during the handling of the patient. It is seen that he uses it when he takes the blood pressure, catheterizes, gives rectal instillations, or moves the patient from one room to the other. My observation has been that in this country we are less careful in respect to preventing convulsions. Nearly all of us have seen patients have convulsions, when they are taken from their bed at home and put in the ambulance stretcher; again when first put in the hospital bed and again when put on the hospital stretcher and another when put on the operating table. It would seem that a patient with eclampsia, who lives many miles from a hospital, would have a less number of convulsions, if she were left at home to be treated by some conservative method. The time used in transporting her to the hospital could be used in giving some form of conservative treatment and at the same time she would be less apt to have more convulsions, making her chance for recovery more likely.

The aim of every one doing obstetrics as relates to the treatment of eclampsia, should be:

1. Prophylaxis. This will prevent 85 per cent of actual eclampsia.

2. To treat actual eclampsia in a conservative manner so as to (a) prevent convulsions, (b) promote the elimination of toxins, (c) terminate the pregnancy in a manner that will cause the least amount of traumatic injury to the patient and thus prevent infection.

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## THE INTERNIST CLAIMS ECLAMPSIA\*

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In the United States childbirth means death to one in every one hundred and fifty pregnant women. Approximately half of these ten thousand deaths are caused by sepsis. Eclampsia must be a close second. Over 5000 cases of actual eclampsia occur annually, and of these at least 1500 women die. In addition, the lives of twice as many infants are sacrificed.

The reduction of this mortality demands the serious attention of the whole profession. If the cause of eclampsia were known, a successful rational treatment would be devised. Most of the suggested causes in the past have been little more than guesses. Among these might be mentioned intestinal autointoxication, deficiency of antibodies to counteract placental toxins, excess of fibrin ferment, increase of lactic acid in the blood and cerebral fluid, thyroid and pituitary deficiency, bacterial infection, deficient oxidation by the liver of nitrogenous waste material and defective elimination on the part of the kidneys.

More definite search for a causative agent is going on each year, and it is not too much to expect an answer in the near future. But it is not a simple problem. The lower animals are not subject to eclampsia. The nearest approach is postpartum paralysis in cows, which has been successfully treated by injecting oxygen into the udder.<sup>1</sup> It resembles eclampsia in its course and pathology. Nor has eclampsia been produced experimentally in the lower animals, except by injecting the serum of eclamptic women into the hearts of guinea pigs. This work was done by Levi-Solal and Tzanck.<sup>2</sup>

\* Read before Interstate Assembly Clinical Tour, on S.S. Doric, May 24, 1925.

confirmed by others. They found that the serum contains two substances; one a fatal convulsant, the other equally lethal, causing coma. It is likely that the secret will be found through biochemic study of this sort rather than through blood chemistry.

The placenta has recently received a great deal of attention as a possible cause. The matter of neutralization of antibodies (hormones) has been mentioned. Ottenburg,<sup>3</sup> referring to McQuarrie's<sup>4</sup> reports on the incompatibility of maternal and fetal blood in its relation to toxemia, recalls the work of Dienst<sup>5</sup> which aimed to prove that "eclampsia is nothing but a transfusion of the incompatible blood of the child into the mother's circulation, as a result of a communication between the two." He recovered in the urine of toxemic or eclamptic mothers methylene blue, which he had injected into the umbilical artery while the placenta was still in situ. The experiment failed in normal parturient cases.

Dienst afterward receded from this position, partly because of the two cases reported at that time of eclampsia in the presence of hydatidiform moles. Since then five more cases of hydatidiform mole in eclampsia have been reported. It would seem also to be controverted by the numerous cases of convulsions developing a considerable time after the delivery of the placenta.

Soli<sup>6</sup> found no gross differences between eclamptic and nontoxic placenta, but invariably in eclamptic placenta the villous capillaries were congested and dilated. He concluded that diminished resistance of the walls allows the escape of fetal blood into the mother's circulation. Zweifel,<sup>7</sup> however, was unable to produce anaphylactic reactions on pregnant animals by injecting the blood of their own fetuses.

The study of the urine has thus far yielded nothing that will distinguish the cause of eclampsia from that of nephritis. The study of the blood with reference to retention of nitrogenous material has led to some confusion. Out of this we gather only the following<sup>8</sup>: The nonprotein nitrogen (except for slight rise in uric acid) is less in the blood of pregnant women than in nonpregnant women. In toxemias of pregnancy the nonprotein nitrogenous elements are greater than in the blood of normal pregnant women, but much lower than in the blood of uremia. Pregnancy toxemias of the hepatic type (eclamptic) show less urea nitrogen in proportion to the total nonprotein nitrogen than is normal.

This last statement, if confirmed, may lead to the discovery of the retention of some highly toxic nonprotein nitrogenous substance hitherto unknown.

But these researches have resulted in little more than to enable us to distinguish the toxemia of renal insufficiency from other types. Efforts have been made to classify all types of pregnancy toxemias. They may be set down thus: (1) renal, (2) hepatic, (3) cardiovascular, (4) endocrines (thyroid, parathyroid, pituitary dysfunction), (5) focal infections, (6) obesity (metabolism, oxidation, dietary).

It is difficult or impossible to place each individual case in its appropriate group. In fact, almost any case may overlap but, as Herrick<sup>9</sup> says, "each group centers about an important defect in the maternal organism, a defect that apparently antedates the pregnancy. Appreciation of this fact is important. It leads up to a general conclusion that toxemia of pregnancy does not occur primarily because the woman is pregnant, rather does it occur primarily because the woman has defective health and cannot maintain her equilibrium under the strain of pregnancy."

The Jewish Hospital, New York, in the years from 1909 to 1918, had one eclamptic to every 275 deliveries. In the years 1919 to 1923, the proportion was one eclamptic to 971 deliveries. This reduction of the incidence of eclampsia by two-thirds resulted from prophylactic measures. These measures were blood pressure readings, urine examinations, hygiene, embracing the restricting of proteins and salt, abundance of water for drinking and bathing, and a follow-up system by nurse and social worker.

The next requirement is the management of these prospective mothers from the internist's point of view. In addition to the routine prophylaxis, there is furnished thus a study of the individual toxemic woman. She accordingly becomes a patient treated for an ailment which is complicated by pregnancy. No prophylaxis, however careful, has been able to entirely prevent fatal eclampsia. DeLee<sup>10</sup> states that for many years he had no death from eclampsia, when the woman had proper prenatal care, but recently lost two women who had had rigid supervision throughout pregnancy.

If eclampsia develops in a toxemic woman, does the case cease to belong to the internist? It is the purpose of this paper to show that the eclamptic woman is safer, if she is handled as a medical case complicated by pregnancy. As regards a rational treat-

ment based on a known cause, we are just where we were a generation ago. What have these years taught? At that time the academic pronouncement was that eclampsia, being due to pregnancy, the only treatment is to terminate the pregnancy post-haste. This was so emphasized in textbook and discussion that throughout the profession it has been the first thought. In actual practice it has been too often, "never mind the mother, never mind the child, empty the uterus!" Empiricism has been proving that this dictum is wrong. Evidence is not lacking that the vast majority of our medical men have failed to keep informed.

The advance of conservatism has been very gradual. It is a quarter of a century since Stroganoff, following Veit, startled the obstetric world by reporting a large series of eclamptic cases with a maternal mortality of 9 per cent, and a corresponding reduction in the death rate of the viable infants. For the most part he was met with scepticism and even scorn. However, a few believed and adopted his plan. Among these was Tweedy, of Rotunda Hospital, Dublin. For a dozen years his mortality ran about 8 per cent. The mortality is still about 10 per cent in the hands of Fitzgibbon, the present master of Rotunda Hospital, who has slightly modified the Tweedy method, using much less morphine.

It is understood we are dealing with the treatment of the patient who has actually had one convulsion or more. Tweedy insisted on a routine which was not to be varied. No detail could be disregarded. No anesthetic is administered. The convulsions are to be treated by morphine. The initial dose is  $\frac{1}{2}$  grain hypodermically, with  $\frac{1}{100}$  grain of atropine. Subsequent dosage is  $\frac{1}{4}$  grain of morphine alone every two hours up to 2 grains in twenty-four hours, or until the respirations are reduced to six per minute, or the convulsions cease.

If the patient is conscious, a drastic cathartic is given, two ounces of castor oil with three drops of croton oil, or three ounces of magnesium sulphate crystals in a saturated solution. If vomited, the cathartic is repeated in fifteen minutes and followed by large quantity of water. If she is unconscious, the stomach tube is passed and the stomach irrigated until the water returns clear. This may not be feasible until the morphine has taken effect. The stomach is emptied to avoid regurgitation. The cathartic is then introduced through the tube. The bladder is emptied by catheter, but repeated only for distension. The patient is now turned on her

side, and with hips over the edge of the bed, the bowel is irrigated until the water returns stained with feces. Often several gallons of water are required. A dram of sodium bicarbonate in a pint of water is introduced by the tube and retained. In eight hours, if the cathartic has not operated, the colon is again irrigated. If the bowels have not acted after another six hours interval, the cathartic is repeated. There should be four to six bowel movements in the first twenty-four hours.

After the first dose of morphine, if the patient is not able to take abundant fluids by mouth, a hypodermoclysis of sodium bicarbonate or normal saline is begun. Even in the presence of edema this is done because, though the subcutaneous tissue may be waterlogged, there is a deficiency of water in the circulation. Hypodermoclysis is repeated in eight hours, if there is no improvement in the condition. Tweedy used hot linseed poultices to the kidney region, renewing them every two or three hours, believing it aids in relieving kidney block. He insisted that a lateral posture is extremely important to prevent aspiration-pneumonia, choking or drowning. The patient must be kept on her side in such a position that saliva may constantly escape from the mouth.

Part of the general care is the prevention of injury, the support of the heart, oxygen and artificial respiration for cyanosis or asphyxia. Sweating has no place in the treatment. Venesection was not practiced by Tweedy, so far as I can ascertain. He advocated complete noninterference with the pregnancy. Many cases recover and go on to delivery at term some weeks later. Most of the women come into labor and deliver spontaneously, but forceps with the head on the perineum may be justified to complete the delivery. As the case improves, convulsions cease and the patient becomes conscious, whether delivered or not. As much water as the patient can take is given, but all food is withheld for at least twenty-four hours. The case is then managed as an ordinary case of toxemia.

It was quite a dozen years before Tweedy's figures made much impression in America. The modern cesarian section was in vogue. By it some surgeons lowered the mortality. Vaginal hysterotomy had numerous advocates. There were those who admitted that conservative management must give the best results, but were unwilling to give up some favorite procedure, such as venesection, the use of *veratrum viride*, or cesarian section. However, a few leaders gave the method a fair trial.

Craigin<sup>11</sup> reported for Sloane Maternity in 1918, that the mortality had been reduced from 28 to 14 per cent. Edgar,<sup>12</sup> a year later, had become a convert. McPherson,<sup>13</sup> of the New York Lying In Hospital, attracted more attention by reporting sixty cases with a maternal mortality of 9 per cent, and an infantile mortality of 19 per cent. Polak, in discussing these figures, said, "the general opinion among obstetricians is that by surgical methods we can not reduce the mortality below 33 per cent." He forthwith adopted the method.

Since these publications seven years ago, there has been more ungrudging acceptance of the conservative method. But the majority of our obstetricians seem to have adhered to venesection. The drawing of 500 to 1000 c.c. of blood seems to be a part of the recommended routine, and many induce labor. They have failed to show better statistics than Tweedy, McPherson or later workers, for instance, Solomons,<sup>14</sup> who reported 204 cases treated by the Dublin method with a mortality rate of 10.29 per cent. Fitzgibbon<sup>15</sup> says, "the methods advocated, or their modification, are the only ones as yet capable of showing a mortality in eclampsia of less than 10 per cent."

Miller<sup>16</sup> says, editorially, "perhaps the greatest abuse of the cesarian section operation has been in the treatment of eclampsia. Many surgeons still advocate it almost as routine treatment, in face of the fact that the maternal and fetal mortality is still about 50 per cent, and that competent obstetricians are reporting results by palliative measures never equalled by the advocates of abdominal delivery."

There are a few cases that may require cesarian section, but it is dangerous to admit that statement. It is the best surgical procedure, if one wishes to operate on a patient in shock who might get well if let alone. Those who are most successful with cesarian section use it with the Tweedy method of elimination. Looking at the record of the conservative treatment, the indication for cesarian section must be something more than severe eclampsia. In this connection it is well to remember that hemorrhage is a symptom of eclampsia and does not necessarily mean that the placenta has become detached. Let the indications for cesarian section be the same in eclampsia as in the noneclamptic case.

For the induction of labor in the preeclamptic, the gentlest possible introduction of elastic bags is best. Even manual dilatation may ruin the patient's chances for recovery.

There is great tendency in the United States to modify the procedure of Tweedy's. In general less morphine is used. The department of obstetrics, Washington University,<sup>17</sup> reports that, following Dorset's use of magnesium sulphate in place of morphine, they have given 5 c.c. of a 25 per cent solution of magnesium sulphate into the muscle at forty-five minute intervals for three to four doses. Larger amounts they consider dangerous. The Los Angeles County Hospital<sup>18</sup> has been using as many as three intravenous injections of 20 c.c. of a 10 per cent solution of magnesium sulphate in eclampsia, reporting seventeen severe cases with one death, fourteen consecutive cases with no death.

Recently the British Association of Obstetricians and Gynecologists<sup>19</sup> conducted a survey covering ten years of eclampsia in the British Isles. Over 2000 cases were fully investigated. The average maternal mortality was 22.5 per cent. The mortality rate in Dublin, which was included in the territory, was but 10 per cent. Eden, who reviews the report, commends such collective study and deplors the fact that medicine in all its branches has been dominated in so many instances by some enthusiastic individualists who have gained the ear of the profession.

The cases were classified into mild and severe, the severe cases being those that show two of the following conditions: a pulse of 120, a temperature of 103°, a number of convulsions greater than ten, a urine which becomes solid on boiling, the absence of edema and a blood pressure of 200 or more.

Eden draws the following conclusions, based on the maternal mortality classified in reference to the treatment that was carried out: (1) Natural delivery, (2) assisted delivery, (3) induction of labor, (+) cesarian section, (5) accouchement forcé, the mortality being in that order.

1. It is easier to prevent eclampsia than to cure it.
2. A case of eclampsia is not a case for domiciliary treatment.
3. A classification of cases into mild and severe upon the lines indicated would facilitate treatment and make clinical records of much greater value.
4. All cases of eclampsia whether mild or severe are best treated with the minimum of operative interference.
5. Simple medical treatment carefully regulated and closely watched gives the best results.

Our experience with the conservative treatment during the past six years can have no statistical value. Some clinical observations have been made.

The infants born at or near term show a surprising freedom from narcosis. In one of our cases, in which the mother received a grain and three-quarters of morphine in eighteen hours, the infant was manifestly narcotized. Stimulation for forty-eight hours with atropine and strychnine was followed by recovery. The contortions of labor pains in a comatose patient simulated the beginning of a convulsion. An extra fourth grain of morphine was given by the attendant. The child, which had been in good condition, was born dead. Possibly the extra morphine was too much. In irrigating the bowel, when feces appeared, it has seemed to be the turning point.

It is our impression that pituitrin even in a small dose may precipitate a convulsion. We can not agree with the statement that the passage of the rectal or stomach tube is likely to bring on a convulsion. Venesection is spectacular but unnecessary. *Veratrum viride* is a dangerous drug. It can suddenly reduce the blood pressure from 200 down to 70, and adrenalin may fail to bring it back. Caesarian section does not save the babies to a greater extent than it saves the mothers. Their chances are better coming the other way.

Our attention should be directed to the toxemic or eclamptic patient as a sick woman who happens to be pregnant. The toxemias of pregnancy can be classified into groups. The toxemias who become so because of focal infections comprise a large and important group. The study of the toxemias and the prevention of eclampsia are peculiarly in the province of the internist. The humblest member of the profession, having memorized Tweedy's routine, has a right to treat eclampsia, if he possesses a hypodermic syringe, a large needle, a rubber tube and some sort of a funnel.

A small series of cases in any man's experience should not form a criterion as to the proper treatment. The profession should accept the treatment which over a long period and in a large number of cases has shown the best results.

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## MORPHINE-SCOPOLAMINE ANALGESIA IN OBSTETRICS\*

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Morphine-scopolamine seminarcois, if correctly used, is an inestimable boon to the woman in labor. Its use was first suggested by Von Steinbuchel who in 1902 reported his results in twenty cases. Gauss of Kronig's clinic, in Freiburg, in 1906 published the results of their first six hundred cases, and shortly thereafter its use became quite widespread both in this country and abroad. Soon numerous articles appeared on the subject, some confirming the work of Gauss and praising the procedure, others filled with the severest adverse criticism, and condemning the employment of the drug in obstetrics. Newall and McPherson used it extensively and at first were enthusiastic but later abandoned it, due to the high percentage of asphyxiated babies. After a time the general enthusiasm waned and scopolamine narcosis fell into disrepute, but in 1915 Harrar and McPherson,<sup>1</sup> as well as Rongy,<sup>1</sup> made a painstaking investigation of the entire subject with favorable comment and, due to their efforts, the tide of approval turned again in favor of "twilight sleep."

Scopolamine, also called hyoscine, is an optically active alkaloid derived mainly from *scopola*. Its peripheral action agrees quantitatively with that of atropine, but its central action is mainly sedative in all doses. Idiosyncrasy causes individual variations in its toxicity. Statements have been made that there are specific differences between scopolamine and hyoscine but Sollman<sup>3</sup> is the authority for the statement that no difference can exist, if pure alkaloids are employed, no matter what their source. In man large doses generally produce drowsiness with a natural dreamless sleep. This response, however, is variable and in some the sleep is preceded by hallucinations which may be rather pleasant with smaller doses, but become violent if the dosage is increased.

There are certain advantages in using this form of analgesia which far overshadow its drawbacks. In all cases where it is used the pain caused by the first stage uterine contractions is markedly dimin-

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ished, and in by far the greater majority complete amnesia is obtained; in fact, this amnesia is so complete that it is the experience of all who use the drug correctly to have the information volunteered by patients that they have no recollection of any happenings from the time the nurse gave them their second injection, until they awoke from sleep and were told that their babies had been delivered.

In multiparæ who have had cervical repairs, or where the first stage of labor is protracted due to premature rupture of the membranes, this type of narcosis is of benefit. In those cases of persistent posterior positions, when the descent of the head is arrested and the cervix dilates very slowly, it is also a great aid, both to the patient and to the accoucheur. In cases of delivery through the birth canal in women who have been previously delivered by cesarian section, all voluntary straining on the part of the parturient is to be avoided, and scopolamine-morphine narcosis aids greatly in accomplishing this end. In cases of pulmonary tuberculosis and cardiac disease it is of aid, as well as in cases of eclampsia, when the patient is in active labor and forced delivery is not indicated, as it aids in successfully combatting the convulsions, and renders the patient less sensitive to external stimuli.

After employing scopolamine in a thousand cases at the Barnes Hospital, Swartz and Krebs<sup>4</sup> feel that the contraindications to its use are more imaginary than real. However, they feel that it should be used with hesitancy in premature deliveries because of the incompletely developed respiratory apparatus and the lessened irritability of its regulating center. With eclampsia, placenta previa or heart disease complicating the pregnancy, the greatest care must attend its use, because the patient is a poor risk, the prognosis is bad for the fetus and whatever the outcome may be the cause is sure to be laid to scopolamine. In a certain percentage of cases marked irrationality is observed during the narcosis and it is wise to assure the relatives in case they are at hand that this is a natural result of the drug and is of no consequence.

During the use of "twilight sleep" it is necessary to keep the patient under the closest observation and the busy practitioner may feel that he cannot spare the necessary time with the patient and hence may not employ the drug for this reason. In multiparæ with soft, easily dilated cervices; in women with small pelves, where there is a question of the necessity of cesarian section; or where placenta previa or eclampsia complicate and forced delivery may be

called for, scopolamine-morphine seminarcois is absolutely contraindicated. Scopolamine, as well as morphine, depresses the baby's respiratory center and lessens its irritability and, if the drug is to be used in a manner which is safe for the fetus, at least three hours must intervene between the last dose of scopolamine and the delivery of the baby. It is for this reason that the drug should not be used in the above type of patient. Many babies delivered during this three hour interval live, but a large number will be found who cannot be stimulated to use their respiratory apparatus.

This is the morphine-scopolamine routine now used in Bill's Clinic at Cleveland Maternity Hospital. The primipara is the patient of choice and it is for her that scopolamine is particularly advantageous. When the first stage of labor has definitely started, that is, when uterine contractions are occurring at from five to seven minute intervals and last thirty seconds, which fact should be determined by placing the hand on the abdomen and not by the patient's demeanor, the routine may be started. After the patient is shaved and has received an enema, one-sixth grain of morphine and one one-hundred and fiftieth grain of scopolamine hydrobromide are given subcutaneously in the arm. This site of injection is important because we desire the drug to be absorbed more slowly than if given intramuscularly, while if given in the leg it is apt to be given into the subcutaneous layer of fat and absorbed too slowly. All relatives are to be barred from the patient's room, which should be darkened and the nurse directed to see that all external stimulation be avoided. This first injection usually causes a dryness of the mouth and throat and a flushing of the blushing area. Forty-five minutes later one two-hundredth of a grain of scopolamine is injected. The morphine is never repeated after the first dose. Forty-five minutes later one four-hundredth of scopolamine is given and, following this at intervals of one and one-half hours the dose of one four-hundredth is repeated until the cervix is approximately four fingers dilated.

We feel that it should take approximately three hours from the time the cervix is four fingers dilated until the head is on the perineum, in other words, until the caput is presenting at the vulva. Just preceding each injection a careful rectal examination must be made either by the accoucheur or a competent assistant, whose knowledge of what he feels by rectal examination is beyond question. It was because of lack of observation of this point

more than any other that scopolamine fell into disrepute after its early use.

It should be remembered that, while this routine is the procedure in a general way, each individual case requires the exercise of judgment and individual variations may be necessary. Some patients, whose tolerance to the drug is less than the average, will be found to require their injections at longer intervals and an easy means of testing the degree of narcosis is to ascertain the presence of distal ataxia by having the patient touch her nose with the tip of her finger. If this can be done with no sign of ataxia, the patient is not deeply enough narcotized. If the patient's pupils no longer show the usual dilatation at the height of contraction because they are already dilated to the maximum from the action of the scopolamine on the terminals of the third nerve in the iris, she is too deeply under the effect of the drug, and it is between these two boundaries that we desire to keep the parturient.

In the multiparæ a dilatation of the cervix to the extent of four fingers should not be reached before the drug is stopped; in fact, no definite time can be given for stopping the drug for multiparæ, because it has been the experience of all who do obstetrics to see a multipara progress from a point where the head is floating and the cervix undilated to delivery with a very few uterine contractions, and it is an old and trite saying among obstetricians that "one cannot trust a multip." In the latter part of the first stage and during the second it is well to supplement morphine-scopolamine narcosis with ether analgesia. Two drams of ether placed in a closed cone, held over the patient's nose and mouth during a contraction, is adequate for this purpose.

The fetal heart should be counted at frequent intervals and the drug stopped, if the rate rises extremely high, becomes markedly irregular, or lessens in rapidity to below one hundred and twenty beats per minute, although there is no evidence that these alternations are caused by the drug. Occasionally the patient will declare that she is getting no effect from the drug and will abuse those in charge for this reason, but after delivery will have no recollection of these occurrences. Others are found who have what Gauss calls "memory islands," recollections of isolated occurrences during the labor, such as removal to the birth room or entrance of someone into the room, but cannot recall the memory of a single pain.

When the head is on the perineum and three

hours have elapsed since the last dose of scopolamine has been given, the patient should be taken to the delivery room and prepared for delivery. It is our custom at this time to anesthetize the patient with ether, catheterize her and manually dilate the perineum by introducing into the introitus, first, one finger well lubricated with sterile liquid soap, then two fingers, three, four and finally the entire hand, using a gentle waving motion with slight downward traction, care being taken to avoid breaking the continuity of the vaginal mucous membrane for, if the mucous membrane is torn in the slightest degree, the whole effect of the dilatation is lost and a torn perineum with a lacerated levator ani muscle is inevitable.

After the perineum has been completely dilated, and to accomplish this correctly at least fifteen minutes should be taken up by the maneuver, the anesthetic is lightened to the point where uterine contractions occur without the patient regaining consciousness, Tucker-McLain solid blade forceps are applied to the head, and during uterine contractions it is gently extended over the perineum. The solid blade leaves no mark on the fetal head and by use of the forceps the patient is saved considerable labor with no ill effects. In cases of persistent posterior positions, after full dilatation of the cervix, the condition is met as suits the case, usually with the modified Scanzoni maneuver.

The results of the use of morphine-scopolamine analgesia in obstetrics in the hands of careful investigators, such as Harrar, McPherson, Swartz and Bill, have led them all not only favorably to recommend it, but in addition to use it routinely in their own private practices. One objection that has been launched against its use was that it predisposed babies to postpartum cerebral hemorrhage. At the Barnes Hospital,<sup>5</sup> in 1921, a newborn service, a combined obstetric and pediatric service was instituted. A full time resident pediatrician and a full time obstetrician made daily rounds completely, examining each newborn infant. Since the inception of this service, nothing of an unusual nature has been noticed in children born in "twilight sleep," nor has there been any way of recognizing these children.

#### CONCLUSIONS

1. Morphine-scopolamine narcosis lessens pains caused by first stage uterine contraction in all cases and gives complete amnesia in most cases.
2. Is indicated in all normal primiparæ and in multiparæ, in whom a long labor is expected.

3. Is contraindicated in cases where operative interference is necessary.
4. Requires the most careful supervision.
5. If correctly used, has no deleterious effect on mother or baby.

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## THE GWATHMEY METHOD OF SYNERGISTIC ANESTHESIA IN OBSTETRICS\*

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In the very recent past it was considered by the pregnant woman, and by a large number of physicians, that it was necessary that childbirth should be accompanied by severe and unrelieved pain. The fact that this was formerly true still makes possible an attitude of indifference on the part of many physicians toward the suffering of the pregnant woman at the time of childbirth. There has been a marked change in the past few years relative to the whole subject of anesthesia in obstetrics. Now the average parturient is coming to the physician seeking and expecting that her suffering during labor be relieved. During the past few years there has developed a great deal of literature on the subject of anesthesia and painless childbirth. The medical profession has at last awakened to this important subject and has been seeking for some little time a method of painless childbirth which at the same time will be harmless for the baby and mother.

The chief points brought out by Gwathmey in outlining this method of synergistic anesthesia are: "That the childbirth is made painless in eighty-five to ninety-five per cent of cases, that the method is harmless as far as the mother and baby are concerned and that it can easily be used in the home by the average practitioner, inasmuch as the materials are easily accessible, cheap in price and are

drugs the average profession is well acquainted with." His technic was worked out after it had been tried in over one thousand cases.

In a personal communication from Dr. Gwathmey, he states: "If an anesthetic is superimposed upon an already analgized patient, this constitutes the one great danger. The patient should never be carried to the stage of anesthesia that is usual, without this medication." He states "there have been no ill effects, so far as he knows, to the mother or baby at any time. It should be used in the home as well as in the hospital and by the general practitioner. The patient need not be watched as in other methods; it is simpler than any other method and can be used anywhere. Nephritis does not contraindicate its use. The rectal instillation has been repeated as many as two or three times in the course of a long labor without ill effects to the child. Magnesium sulphate may be injected any number of times but the morphine should be limited. If the patient is properly prepared, vomiting does not occur any oftener than usual."

He has now used the method in between four and five thousand cases in the New York Lying-In Hospital with not a single accident that could in anyway be attributed to the method. He states that "it is very natural for some one with a limited practice to attribute anything that may go wrong to some new drug or method that he may be using and this must be expected." He states that every private case that comes into the Lying-In Hospital gets this treatment; every clinic case gets the treatment, if she is not too far advanced.

Before reviewing the literature on this subject, in order that all may understand what is meant by this method, I will briefly state that it depends on the use of small doses of a number of common drugs which act synergistically on each other. The drugs as now used are morphine, magnesium sulphate and ether. The magnesium sulphate and morphine are given intramuscularly, the magnesium sulphate without the morphine being repeated at least three times. The ether is given in oil by bowel within one or two hours after the initial hypodermic, the patient being relieved of pain for a period of from four to six hours, after which time, in case of a long labor, the method in total or in part may be repeated if necessary.

As far back as 1898 Meltzer observed that an intracerebral injection of two drops of fifteen per cent solution of magnesium sulphate produced complete anesthesia and relaxation of animals, lasting

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several hours. In 1913 Meltzer and Auer made the observation that, after the intramuscular injection of one-half or less of the anesthetic dose of magnesium sulphate, animals are readily anesthetized by very small inhalations of ether which are insufficient to anesthetize normal animals. The dose of ether which was sufficient to cause deep anesthesia was hardly one-tenth of the dose which was otherwise required for a similarly deep anesthetic without the help of magnesium sulphate.

In 1916 Peck and Meltzer first employed magnesium sulphate as an anesthetic in man. Hooper and Becker in 1924 found that the administration of less than one-half the anesthetic dose of magnesium sulphate with one-ninth the anesthetic dose of ether produced surgical anesthesia without increasing the toxicity of the combination. As a result of this and other work, it was decided that these drugs have a true synergism which may be defined as the reciprocal augmentation of one drug by that of another. This augmentation is not due to a simple summation of pharmacologic actions, because the effect produced is altogether too pronounced.

The combination of magnesium sulphate with morphine was first suggested by Pellini who, in association with Gwathmey in 1921, carried out a sufficient number of dog experiments to prove that one-eighth grain of morphine, dissolved in 2 c.c. of twenty-five per cent solution of magnesium sulphate and repeated twice at one-half hour intervals, analgized the animals entirely. Control animals, given the same amount of morphine in plain water, were not analgized to anything like this degree. Gwathmey established the fact, after numerous clinical observations, that morphine, if given in a fifty per cent solution of magnesium sulphate, has its value increased fifty to one hundred per cent. When magnesium sulphate is used with ether the latter may be cut one-third to one-half in amount. He states that "magnesium sulphate when combined with ether and morphine is the most valuable drug in the pharmacopea."

Smythe in 1923 employed small doses of morphine dissolved in magnesium sulphate preliminary to novocaine anesthesia in tonsillectomies. Weston and Howard in 1923 used magnesium sulphate in over one thousand mental cases with good results, and Lederer in 1924 advocated the use of morphine, dissolved in magnesium sulphate with rectal instillation of ether, in surgical cases, and reported his experience with the method in one thousand cases.

In 1915 Arrowsmith, of Brooklyn, used oil-ether colonic anesthesia successfully in over two hundred successive operative cases. Cattle reported, in the same year, over one hundred successful cases operated on under this method. Lanthrop has operated upon over one hundred cases of goiter, using this method. Lombard reported over one hundred and fifty cases in various operations. Prior to 1915 a total of one thousand surgical cases were reported, using synergistic anesthesia. Since that time many thousands of cases have been reported. Oil-ether colonic anesthesia is now a well recognized and approved method and is so acknowledged by the many who have taken the trouble to thoroughly acquaint themselves with its technic.

When oil-ether is given by fixed rules, now well understood, it is physically impossible to shock the patient, either at the time of introduction or during the anesthesia. Six ounces of ether given to an average sized patient by bowel will last over three hours, as the plane of anesthesia is constant. The patient is absorbing about two ounces of ether per hour, while with the drop method of giving ether it requires from four to six ounces per hour. Gwathmey states, "that after administering the oil-ether mixture it is impossible at any time to withdraw the oil and leave the ether. Every molecule of ether is bound to a molecule of oil and this union is broken only when vaporization occurs. When anesthesia is established, it is automatically maintained by the ether separating from the oil according to certain inflexible physical laws. The amount of this vaporization per minute never varies. Therefore, it is impossible to have a deep anesthesia at one time and a light anesthesia at another. The anesthesia can be concluded at any time by placing a large rectal tube in position and massaging over the colon and withdrawing the solution. Thus, the administration is as definitely under the control of the anesthetist at all times as if he were giving it by an inhalation method." Baskerville, following extensive clinical experiments states that, while the total amount of the mixture is within the body, the patient is as safe from an overdose, as though it were in a container outside of the body.

Paradoxical as it may sound, the patient under oil-ether colonic anesthesia inhales a warm, moist vapor at all times. When the ether is taken up by the blood vessels surrounding the colon, it is carried through the liver and on to the heart and from there pumped into the lungs. By the time the anesthetic has reached the lungs, it is moist and

thoroughly warmed to the body temperature. There is no irritation to the lungs whatever. The principal factor in the automatic action of the anesthetic is the evaporation of the ether from the oil in the colon. As the mixture approaches the body temperature, ether vapor is given off which cools the mixture and retards evaporation. This process occurs automatically until all the ether has parted from the oil. During this time the temperature of the patient remains normal, the skin is warm and the color suggests thorough oxidation at all times. The cold clammy sweat often noticed, when ether is given by other methods, does not occur with oil-ether. Quiet respiration, normal pulse and good color during the anesthesia indicate that no toxic condition exists. The patient emerges after the anesthesia into a deep sleep, from which she usually awakens as from natural slumber.

The first report of synergistic anesthesia used in obstetrics was made in a preliminary paper by Gwathmey and his associates in 1923. The results in this series of cases were as follows: It was exciting in three per cent, unchanged in three per cent and sedative in ninety-four per cent. The deliveries were ninety-six per cent normal and four per cent with forceps. Postpartum hemorrhage was unchanged. Labor was increased in time in four per cent and progressed uneventfully in ninety-six per cent of the cases. Nausea occurred in two per cent and vomiting in eight per cent. Pain was modified or abolished in ninety-six per cent. The baby was asphyxiated in one per cent, apneic in two per cent and crying in ninety-seven per cent. In 1923 a second report by Gwathmey states that all the previous agents and methods of anesthesia require either a specialized technician, unusual equipment or trained personnel.

It was decided that this method should be so simple that it could be used either in the home or hospital and by any physician. The ideal sought was a state of relaxation and analgesia, with consciousness a little, if at all impaired, so that full cooperation might be had at all times. The method was worked out in the New York Lying-In Hospital. The results were the same as in his previous paper. He stated that, "by using the minimum dose of a number of drugs synergistically, the sensation of pain can be abolished without affecting the normal process of labor." The usual objections to certain other methods such as prolonging labor, making forceps more necessary, causing a higher percentage of ruptured perineums, causing restless

delirium and violence, postpartum hemorrhage and uncertain results, do not seem to obtain with the present method. With the synergistic method relaxation is secured with the magnesium sulphate which also prolongs the effect of the morphine. The ether is a powerful stimulant and analgesic as well as an anesthetic.

In February 1924 Gwathmey offered another paper on painless childbirth by synergistic methods. In this he stated that the synergistic method is so simple that it requires so little attention after administration, that it can be used by any physician acquainted with the technic. He stated that, "pain is eliminated, contractions continue, labor is not delayed and the memory of events is either clouded or completely obliterated. Sometimes no anesthetic is needed, even when the head is passing over the perineum, nor is it required for an episiotomy or repair of lacerations. The mother may not be aware of the birth until told. As with all drugs or systems, the effect varies with the individual patient and with the confidence she has in the doctor. Best results are obtained by the maintenance of quiet, and by gentle manipulations."

The contrast between a primipara, apprehensive and suffering acutely with continual backache and sharp recurring pains, tired out by her earlier efforts at dilatation of the cervix, and the quiet, sleeping or drowsy, unworried patient, stirring only when contractions occur is striking. There are no offensive dreams and rarely any cerebral excitement. The patient remains sleeping or quiet for at least four or five hours, proceeding then to pick up the task of labor with renewed strength and vigor. She appears refreshed, no longer apprehensive and oftentimes retains her drowsiness through a severe second stage and delivery. In a number of instances labor progressed so rapidly that the head descended to the perineum without appreciation by the patient. The cervix softens more rapidly. No danger to the fetus has been recognized.

The Gwathmey technic, as perfected in the New York Lying-In Hospital, calls for the following drugs: ampules containing two c.c. of a sterile fifty per cent solution of magnesium sulphate (C. P.), hypo tablets of morphine sulphate, quinine hydrobromate, alcohol, ether, olive oil. Apparatus necessary: five c.c. glass syringe, needle nineteen gauge, one and one-half inches long, five ounce funnel, twenty inches of rubber tubing, rubber catheter, size twenty to twenty-two French, glass connecting tube four inches long, artery clamp. The

first hypodermic of two c.c. of fifty per cent solution of magnesium sulphate with one-fourth grain of morphine is given, when the contractions are strong and are coming every three to five minutes and lasting thirty seconds or more. The cervix should be dilated at least two fingers but an examination is not necessary. The injection is made with the sterile syringe and needle deep into the gluteal region intramuscularly, not into the outer side of the thigh. Avoid injections under the skin. Do not use ordinary hypo needle. After the injection of the morphine magnesium sulphate the patient should be kept quiet, given only the necessary attention. Put cotton in the ears and so far as possible avoid loud talking or noise of any kind. Lower the shades and exclude the light, close the door and cover the eyes with some dark material or a towel. Environment should favor a natural falling sleep. The patient must be watched while asleep, as she may turn from side to side during contractions and fall out of bed. One-half hour after the morphine-magnesium sulphate injections, give a second intramuscular injection of the magnesium sulphate alone. This is given without regard to whether or not the first injection is sedative. It tends to prolong the effect of the morphine. If the effect of the morphine-magnesium sulphate is sedative, withhold the ether instillation until its effect is almost worn off.

In giving the ether instillation there must be strong contractions three to five minutes apart. The cervix should be at least three fingers dilated, although an examination is not necessary before giving the instillation. In the main, the instillation should not be given too early, as the effect will wear off too soon or labor may be retarded. Immediately after the ether instillation a third intramuscular injection of the magnesium sulphate is given. This tends to prolong the action of the ether. If there is no relief after the second injection of the magnesium sulphate within twenty minutes, give the ether instillation. The ether instillation should not be given sooner than fifty minutes after the first injection of morphine-magnesium sulphate.

The instillation consists of quinine hydrobromate, grains twenty in alcohol drachms three, ether ounces two and one-half with olive oil to make four ounces. In giving the ether mixture warm to about body temperature, place the patient on her left side with the buttocks at the side of the bed and apply vaseline liberally about the anus so that the ether if expelled will not burn. Secure the cooperation of the pa-

tient. Tell her that during the administration she is not to press down during pains but to breathe deeply with her mouth open. This will prevent expelling the instillation. Also have her draw up with the sphincter as this will reverse peristalsis and permit the fluid to run more readily. Hold the funnel as high as possible above the anus and pour into it one ounce of olive oil. Just as the olive oil runs out of the catheter pinch the catheter with an artery clamp near the glass connecting tip. In this way air is expelled from the tube. Some of the oil should remain in the funnel.

The catheter is now inserted into the rectum for about six to eight inches. If the fetal head is well down in the pelvis, the gloved finger must be inserted into the rectum with the catheter in order to make sure that it passes the head. The catheter must be held constantly in place. A little of the warm ether mixture is added slowly to the olive oil in the funnel, the clamp is released and the contents of the former permitted to run into the rectum. The remainder of the ether mixture is slowly added, at no time permitting the funnel to be entirely empty. As the last of the ether mixture is about to leave the funnel add the remaining ounce of olive oil. It will take the interval between about three contractions before the entire amount of the fluid enters the rectum. When the patient has contractions she may bear down a little and some of the fluid may return into the funnel. It is best, therefore, never to fill the funnel to the very top. If the patient bears down, permit some of the fluid to return into the funnel, then clamp the catheter to prevent air being drawn into the rectum. Make pressure on the anus with a towel during three or four contractions after the catheter is withdrawn. The standard technic is three injections and one instillation. If labor is prolonged beyond four or five hours from the first injection, the entire technic can be repeated with safety, except that morphine is used sparingly and is omitted when delivery is expected within an hour or two.

After the instillation the patient may be allowed to lie in the position most comfortable to her. Do not make a rectal or vaginal examination within one hour after instillation. If an anesthetic is required when the head is passing over the perineum, give nitrous oxide and oxygen or very light ether by inhalation but not chloroform. To superimpose an anesthetic upon a partially analgized patient is dangerous to the mother and child. Do not be misled in a multipara by the quiet appearance of

the patient into thinking that she is having very slight contractions. Though quiet she may be having strong contractions and may be progressing rapidly and, therefore, should be watched carefully near the end of labor. A casual observer, noting the restlessness or noisiness during uterine contractions, might think the pain was not being relieved, yet such patients on questioning after the labor remember little after the instillation. They may remember the contractions occurring, but do not remember them as painful.

The intensity of the contractions can be ascertained by abdominal palpation. The perineum should be watched for bulging and the fetal heart should be counted from time to time. When the effect of the ether instillation has worn off and the patient complains of pain, a second and even a third instillation may be given at intervals of two and one-half hours or more. Subsequent instillations should have only ten grains of quinine added. Each instillation is accompanied with an intramuscular injection of magnesium sulphate. If the patient has had two instillations of ether it is practically unnecessary to give any further anesthetic at the time of delivery.

The majority of the patients become very quiet after the administration of the drugs. They go through labor, quietly sleeping or dozing and have very little memory of what went on. When a patient is seen late in labor with strong contractions and delivery is expected in less than one and one-half hours, the morphine may be omitted and the colonic ether instillation with the magnesium sulphate injection given at once. This may be given, even if the baby is expected within one hour. It is, however, more difficult to give at this time and is not so likely to be retained. In special cases the second instillation may be given sooner than two and one-half hours after the first one, in case the patient is not getting sufficient relief and in case the birth is expected within two hours. This second instillation, given soon after the first one, should consist of only half the dose of ether and quinine.

Cowan has modified the technic of giving the instillation. Instead of using the funnel he instills the fluid with a syringe slowly and with gentle force between pains. The whole amount to be instilled between two or three pains. The technic otherwise is the same. Inasmuch as the descending head tends to occlude the rectum and make instillation by the gravity method difficult, the syringe is

preferable in those cases, where the head is deep in the pelvis.

I will now report briefly my experience with the method in fifty cases. Thirty-eight of these patients were primiparas and twelve were multiparas. Most of the cases were given the anesthetic prior to the publication of Davis' article in June of this year and my technic was not as perfect as it now is, and did not obtain as good results as I am now getting by using the exact technic as laid down by Davis. In my cases the second injection of magnesium sulphate was not given thirty minutes after the first injection but an hour or more afterwards. Also the ether instillation was not accompanied by a third injection of magnesium sulphate. One-sixth grain morphine was used in all except the last two cases, instead of one-fourth as is now recommended. The ether instillation was not repeated except in my last two cases.

My chief objection to the method as I used it in my early cases was that it did not relieve the primipara for a long enough period but that she again began to suffer after five hours and some of these patients had to be given some nitrous oxide and oxygen during the latter part of the second stage. Also it seemed to me that a fairly large number vomited during or after the anesthetic. Since using one-fourth grain morphine, repeating the magnesium sulphate again within thirty minutes, accompanying the first ether instillation with the third injection of magnesium sulphate and, in a long case, repeating the method or repeating the ether instillation, I have been able to deliver the last few primiparas without any additional anesthetic and have obtained very fine results.

In my fifty cases seven vomited during labor or afterwards. Six cases expelled part of the ether instillation. This was in the beginning of its use and was due to imperfect technic. One patient developed an abscess, due to faulty technic, the magnesium sulphate having been injected in the side of the thigh in the fascia lata. This abscess was drained and did not prove at all serious. Pains were stopped in one case, due to having given the first injection too early. The average number of magnesium sulphate injections in the series was only three. The baby was slightly asphyxiated in two cases and in both was easily revived in less than five minutes. This I do not consider more than the average. Twenty-six patients were sleeping soundly within from thirty to sixty minutes after the instillation, although strong contractions continued to occur as

before. Three patients received the second instillation of ether. The labor was lengthened over the average in one case. This was the one in which the pains were stopped by starting the method too early.

The method was started in my cases when the pains were coming anywhere from three to five minutes apart and lasting thirty seconds or more. The average length of time that the patients were analgized by the three injections and one instillation was five hours. A few of these patients received a very light nitrous oxide oxygen anesthetic for a short time during the actual delivery. This was hardly necessary in a good many cases but, the gas being handy and it having been used previously before this method was taken up, we used it to that extent. The anesthetist commented that a very small amount of a weak mixture of nitrous oxide was all that was necessary to completely anesthetize the patient. Since repeating the instillation, nitrous oxide has not been used. With the technic as imperfectly used in these fifty cases I have classified thirteen as having fairly good results and thirty-seven as having excellent results. The patients were all questioned as to pain within twenty-four hours after the delivery. Five patients had no knowledge of the birth of their babies and remembered nothing after the instillation was given.

If my review of the literature and my report of this small series of cases, in which I have used this method, arouses the interest of the average practitioner to do more to eliminate the suffering of childbirth in a safe manner, I shall feel well repaid for offering this paper.

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## PROLONGED LABOR\*

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Among the greatest bugbears in the life of the average busy practitioner of medicine are the cases of prolonged labor. All the more so because he realizes that good or bad handling of these tedious cases has in the long run more to do with making or marring his reputation as a successful physician than probably any other branch of his work.

The numerous factors involved in the process of the different stages of labor may be conveniently grouped under three headings: the powers, the passages, the passenger. If these are all normal we have what is known as normal labor. Any variation from normal in these will produce an abnormal labor which in the large majority of cases will be a prolonged one.

Beginning, then, with defects of the powers. Inefficient expulsive forces may be due to either primary or secondary uterine inertia, of which primary is fortunately vastly more common.

Faulty uterine contractions are likely to be found in cases of constitutional debility, e.g., a very young girl, a woman exhausted by some chronic disease such as tuberculosis, in cases of anemia or where the musculature is poorly developed. This latter explains the reason why large pale fat women often have a tedious labor.

Another type of patient who falls into this class is the so-called "lady type" or woman of the wealthy classes who has not even housework to give her exercise and who takes no outside exercise whatever during the later months of pregnancy for fear of her condition being noticed. In all these cases a course of tonic treatment, especially during the later months of pregnancy combined with a moderate amount of exercise, is likely to prove beneficial.

The next group includes those with more or less unhealthy uterine wall, e.g., cases with multiple myomata, those who have had chronic endometritis or fibrosed uterus, those who have had frequently repeated pregnancies and who perhaps have not been well looked after as far as involution is concerned, and whose uterine muscles therefore have very little tone. Into this class fall also those who have excessive distension as from twins or hydramnios. In such cases the pains at first may be severe but ineffective because the contractions are localized and not general over the whole uterus.

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True inertia is sometimes seen in elderly primiparæ. In cases of true inertia quinine in 10 grain doses occasionally works well, or use minute doses of pituitrin. Hot stupes to the abdomen or hot vaginal douches also help. As a general rule, though, half a dram of chloral, repeated in an hour if necessary, gives the patient a sleep and allows the uterine muscle a chance to pick up its tone. When the patient wakes the contractions will be much more satisfactory. If they are still weak, stimulate by massage of the fundus, hot vaginal douches or hot fomentations over the lower part of the abdomen, or very small doses of pituitrin. Introducing a bag will usually stimulate contractions in a sluggish uterus.

Deficient enervation causing irregular muscular contractions furnishes us with the next group. That there is a very close connection between the nervous system and the uterus cannot be denied. We have all many times seen cases, in whom strong pains, which had been coming regularly perhaps every ten minutes, have ceased abruptly for half an hour or even longer, owing to the excitement caused by the arrival of the doctor.

A full bladder or a loaded rectum will prolong labor, not only by its mechanical obstruction but also reflexly by causing irregular uterine contractions. The irritation caused by too frequent vaginal examinations will produce the same result. Exhaustion is another cause. The treatment of each of these conditions is self-evident.

In many of the cases of primary uterine inertia another factor comes into play, particularly during the second stage. I refer to the forces exerted by the abdominal muscles. In cases of overdistension, pendulous abdomen, widely separated recti and usually in fat women, the uterine muscles receive very little assistance from the abdominal. Or, again, a woman from fear of increasing the pain may keep her abdominal muscles slack during each period of contraction. A little chloroform judiciously applied will help here, and the application of a tight binder is often a material aid.

Secondary uterine inertia is an entirely different condition and its treatment is almost the exact opposite of that in primary inertia. It may be due to the size, presentation or position of the child or to some fault in the hard or soft passages. Symptoms are rapidly rising Bandy's ring, contractions approaching tetanic, tenderness over lower abdomen, dryness of the mouth and vagina, feeling of impending death. If not relieved, rupture of the

uterus will surely follow. Treatment. Anesthetize and deliver as rapidly as possible, remembering that any version or manipulation of the child in the uterus is distinctly contraindicated. As the child will by this time be dying or dead, no consideration need be given to it.

Taking next the causes of prolonged labor, due to abnormalities of the second factor concerned in labor, viz., the passages, we have first cases of malposition of the uterus. For example, the presenting part may be forced against the sacrum or even higher. In such a case correct the misplacement and apply a tight binder. You may in such a case have to dilate manually. A somewhat similar condition occurs in subjects on whom either a vaginal or ventral fixation has been performed. In such cases cesarian section may be necessary. A loaded rectum, where Douglas pouch is filled with well stuffed coils of intestine, may also cause a displacement of the uterine axis.

Going farther down we come to nondilating cervix. The patient is usually an elderly primipara, in whom the membranes have ruptured early. The condition is said to be due to spasm of the circular muscle fibres of the cervix. In such cases the cervix is often extremely thin, like paper, so that one is apt to miss it. An old name for this condition was knife blade or whip-cord os. It next becomes edematous and then contracts. Diseased cervix comes next, e.g., cervicitis following gonorrhœa. In these cases the edge is rough and irregular and the cervix itself is thick.

With a patient in labor for many hours with either of these conditions the rational treatment is to give morphine, one-half grain, or morphine and hyoscine or chloral, gr. 15, every hour till one dram has been given. Under this treatment the cervix will relax and begin to stretch. Hot douches are also valuable assistants in these cases. Occasionally, though, in the rigid os of the elderly primipara, if dilatation is commenced manually, it will continue normally.

Another condition of the cervix liable to cause delay occurs where the anterior lip becomes nipped between the presenting part and the pubis. Normally the cervix is pulled up by the uterine contractions but in these cases it seems to have been left. Treatment here is to push up the nipped part between the pains. If the delay is due to a very long cervix, you have present one of the rare conditions, where you will probably find it necessary to

apply forceps and slip the cervix back over the blades and the presenting part.

A fairly common cause of delay in the first stage is due to the os remaining high up in the posterior fornix, while the whole contractile force of the uterus is wasted in trying to force the fetus through that part of the anterior uterine wall which lies opposite the pelvic orifice. By hooking the finger into the os and dragging it down into place, full dilatation is often completed by the next few pains. The last cervical condition to which I would draw your attention is where the os has (since impregnation of course) become completely occluded. The treatment here is to make a crucial incision in the proper spot.

Tumors of the cervix usually elongate during labor and can be slipped back, so that it is only in extremely rare cases that they have to be removed before extracting the child. Cystocele and rectocele are two much more common tumors. In cases of cystocele empty the bladder completely by catheter and push it into place between pains. Tumors of the vaginal wall and cysts or growths of the vulva may very rarely have to be removed.

The last, but by no means least common cases where delay is due to faults in the passages, are those of contracted pelves or projecting promontories. These cause delay not only by the mechanical obstacle which they impose but also because the presenting part rarely fits well or is fixed in the brim so that the membranes protrude in sausage-shape and fail to dilate. In these cases dilatation, either manual or by the bag, must be resorted to.

The third and last great factor with which we have to deal is the passenger, that is, the bag of membranes, the fetus and the placenta. The bag of membranes in the normal case not only acts mechanically as a wedge dilator, but also reflexly stimulates uterine contractions. Early rupture, therefore, deprives the patient of this valuable assistant. Its place can to a certain extent be taken by the bag. Hydramnios we mentioned before as causing loss of tone. Occasionally by rupturing the membranes when half dilated the presenting part gets direct pressure on the cervix. In puncturing pass a stylet up under cover of the finger and puncture high up. Occasionally this will permit only part of the water to escape. The opposite condition of oligohydramnios also causes delay, for here you have practically the same condition as in early rupture of the membranes.

Adhesions of the membranes in the neighborhood

of the internal os is probably a very common cause of prolonged labor. It is easily remedied by sweeping the forefinger around inside the internal os between the membranes and the wall. In cases where the membranes are thick and tough they often do not rupture spontaneously when the cervix is fully dilated, and by acting as a cushion against the perineum delay stretching of it, so always rupture the membranes as soon as the cervix is dilated.

The fetus is the next stumbling block to rapid delivery. It may be excessive in size, due either to heredity or to prolonged gestation. The former can be controlled to a certain extent by restricting the carbohydrates in the mother's diet during pregnancy and by giving thyroid extract. Prolonged gestation we can and should control. Premature ossification of the head is another cause of delay. Usually the only treatment for either excessive size or ossified head is forceps delivery.

Malpositions and malpresentations, such as brow, occipitoposterior, shoulder, etc., it is our business to diagnose early and if possible to correct. Deformities of the fetus, hydrocephalus, tumors of the thyroid, etc., are another cause, over which so far we have no control.

In any case of prolonged labor do not be in a hurry to extract the placenta. Give the uterus time to recover some of its tone. Haste at this time is one of the greatest causes of postpartum hemorrhage.

The dangers of prolonged labor are, for the mother, sepsis from frequent examinations. This is much more likely in cases of early rupture of the membranes, for infection runs up the wet passage from the outside to the contents of the amniotic cavity, from whence it spreads to the maternal tissues. Cultivate the faculty of determining progress by external palpation instead of vaginal examination.

Sloughing from prolonged pressure, followed by a fistula, is by no means an uncommon occurrence. Postpartum hemorrhage in cases of prolonged labor should always be guarded against, especially if any secondary inertia has been present.

The chief danger to the child is from pressure, if the labor is too long continued after rupture of the membranes. Another danger is infection, either of the umbilicus or of the lungs by aspiration into them of any infected amniotic fluid, if the membranes have been long ruptured, in which case bronchopneumonia will result.

Summing up, then, the main points in the treatment of prolonged labor are as follows:

Chloral, morphine, hyoscine, chloroform and ether are the most useful assistants. In occasional cases quinine or minute doses of pituitrin may be useful, and after full dilatation has occurred pituitrin and forceps may be desirable aids.

In many cases hot vaginal douches and hot stupes to the abdomen are serviceable.

Do not forget in all cases to supply the patient with plenty of light nourishment.

In all cases remember that time and patience are the chief requisites for real success.

### USE OF RADIUM IN CERTAIN TYPES OF UTERINE BLEEDING\*

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The causes of uterine bleeding may be placed in three general divisions: (1) Where it is due to intrinsic uterine pathology, as cancer of the cervix, polyp and fibroid. (2) Where the uterus is normal and it is due to extrinsic disease, as salpingitis and tubal pregnancy. (3) Where there is no gross internal or external pathology, the so-called "essential menorrhagia" or "uterine insufficiency." First, I wish to call your attention briefly to the use of radium in myomata and then to the interesting conditions described under the general term of "essential menorrhagia."

#### USE OF RADIUM IN BLEEDING DUE TO MYOMATA

Perhaps it may seem trite to state that surgery is not the only treatment for uterine fibroids. In recent years many of the leading gynecologists of the country have developed certain working rules by which they differentiate myomata as to treatment by surgery or by radium. There is no question but that surgery is the proper treatment for pedunculated subserous growths, for the submucous types appearing in the fundus or through the cervical canal, or the isolated mural myomata, particularly in young women, where every effort should be made to preserve the uterus with the future thought of pregnancy.

On the other hand, radium can be safely and successfully used as the only method of treatment when the following conditions exist: (a) Where the uterus is more or less uniformly enlarged but not beyond the size of a three months pregnancy; (b) where there is no evidence of adnexal disease;

(c) in women about or beyond the menopause. If this differentiation is carefully made, and often an anesthetic is necessary to make the proper diagnosis, I believe that fewer abdominal operations would be performed in cases of myomata.

In the use of radium, the following technic is advisable: Patient should be anesthetized (usually gas is sufficient) in order to allow accurate examination to make sure of the possibility of adnexal disease. Dilatation should be done so that curetting can be carried out. The necessity for this is to determine the length of the uterine canal, whether there is any submucous growth, and to make sure that cancer of the fundus is not present. Then a radium capsule is introduced into the fundus and a dose of from twelve to fifteen hundred mg. hours given, with packing in the cervix to prevent displacement of the capsule and plenty of vaginal packing to balloon off as far as possible the rectum and bladder. This dosage should bring about a gradual shrinkage in the size of the growth and of the uterus, and many cases are on record where the tumor has entirely disappeared from within three to six months. The bleeding may stop promptly or may take thirty to sixty days to slacken and will be followed for a time by a thin watery discharge. This amount of radium will probably bring on the menopause or at least amenorrhea for several months. The advantages of this type of therapy are that there is no abdominal wound, that the patient's stay in the hospital is much shortened, and there is a much more rapid return to ordinary duties.

Since January, 1924, I have treated eight cases of myomata with radium, without complications developing, with shrinkage of the tumor and of uterus and a complete cessation of bleeding. The only possible unsatisfactory result was in a woman of forty-three who had for several months rather stormy menopausal symptoms. The following is an illustrative case:

S. O. Myoma uteri, 43 years, 4 children. Periods always regular until spring of 1922, when she began to have increased flow. Hazelnut fibroid was removed from cervix, September, 1922. Periods normal until March, 1924, when flow lasted for nearly three weeks. Began again in four weeks, very profuse, lasting for ten days.

Examination shows uterus in retroposition. Moderate laceration of cervix. Uterus longer than normal and smooth, rounded body felt in posterior wall.

April 16, under gas, cervix dilated, diagnostic curettage with small amount of scrapings. Fibroid on posterior wall outlined, size of egg; 50 mg. radium inserted into fundus, 1150 mg. hours. On May 20 patient had three day period with slight flow.

Feb. 17, 1925, no further periods. No bleeding. Uterus is contracted and no evidence of fibroid felt

\*Read before the Fifty-first Annual Meeting of Oregon State Medical Society, Medford, Ore., Sept. 2-4, 1925.

on examination. Has gained 15 lbs., is working steadily, and has had very slight menopausal symptoms.

#### ✓ RADIUM IN SO-CALLED ESSENTIAL MENORRHAGIA ✓

This is a condition that for many years has been the bane of general practitioners and gynecologists for any medical treatment. The use of whole ovarian substance or corpus luteum in capsules and even frequent curettings have failed to permanently check the often continuous and severe bleeding. Numerous patients, as a last resort, have had hysterectomy performed.

Various theories have been evolved as to the cause of this condition, for bimanual examination reveals a relatively normal sized uterus with no pathology of tubes or ovaries which can explain the causation. In recent years examination of the scrapings show that in about one-half these cases there is a definite hyperplasia of the endometrium and of the submucosa as well. This seems to be a true hyperplasia with an increase in the epithelium, in the glands and in the submucous tissue beneath. It is not malignant nor does it become so even in the cases that are repeatedly curetted. Why it develops is not definitely understood. This condition was first described by Cullen in 1900. Recently Novak and Martzloff have published a comprehensive article on the subject.\*

In the other half of these cases curetting shows only a normal amount of tissue and no pathology, and here it is thought that there must be some hyperfunction of the ovary or an increased formation of ovarian hormones which enter the general circulation. These cases develop at any time during the menstrual epoch; perhaps more about the time of the menopause than in any other decade. Bleeding is practically the only symptom. Periods may gradually increase in length and in amount of flow for a number of years until the leakage is practically continuous; or girls just entering their menstrual life may start off with such severe and almost continuous bleeding that they early require medical attention. The patient gradually develops a secondary anemia with the hemoglobin as low as 30 per cent. Pain at time of periods is rare. Examination shows a normal sized uterus and no pathology in the pelvis. These are the cases where radium gives almost a specific result. Statistics show that 80 per cent are improved or cured by one dose of radium and that only 5 per cent are not benefited by one or more doses.

The proper procedure is to give the patient gas so as to make an accurate examination possible, dilate, curette for diagnosis, saving the scrapings for examination. A capsule of radium in rubber is placed in the fundus and a dose of from 250 to 450 mg. hours given, depending on the age of the patient. The minimum dose can be used safely in girls of fourteen and fifteen without danger of producing a permanent amenorrhea. The effect of the radium may come from one of three sources: (a) Through caustic effects on the endometrium; (b) destruction of the adventitia of many of the capillaries, thus diminishing the blood supply; (c) possibly on the ovary, though the dose is so small that this perhaps may be questioned.

#### IMMEDIATE AFTEREFFECTS

In the majority of the cases there will not be an immediate cessation of flow. In fact, my patients are cautioned that the next period may be as severe as the last, but the second period following treatment should show diminution in amount of flow and in three or four months the duration and amount of each period should be normal, although occasionally a temporary amenorrhea of one or two months duration appears. A small number of patients may need a second treatment when the same dosage is used.

*Pregnancy.* There are enough reports in the literature of patients who have been treated as above who have later had children to show that damage to the endometrium is rare. Patients with hyperplastic endometritis rarely become pregnant and it seems as if the opportunity for pregnancy is improved by such treatment.

I have treated four of each type of the above for a long enough period to report, the ages ranging from fifteen to fifty-one, the hemoglobin from 30 to 75 per cent. Two of these patients treated over a year have recurred to a certain extent and may need a second dose, but the others have returned to a normal rhythm and flow.

V. N., hyperplasia of endometrium, 41 years, single. Hbg. 70 per cent, r.b.c 3,400,000. Periods began at 15, normal until 21. Then began to have increased flow, which has continued ever since. Always regular and pain and headache twenty-four hours before onset.

Curettement five years ago which gave improvement for several months; then return of increased amount although pain has been much better. Under gas dilatation and curetting with marked increase in amount and thickness of scrapings.

Pathologic diagnosis, hyperplasia of endometrium. Treatment, 50 mg. of radium screened with rubber put in fundus for seven hours. Has had two normal periods since with no pain and decreased flow.

V. E., essential menorrhagia, 23 years, single, teacher.

\* Novak and Martzloff. Trans. of Amer. Gynec. Soc., 1924.

Periods began at 16, coming every two or three months, then would last for three to six weeks. Cured in August, 1921, and again in May, 1922, with improvement for six months each time. Last period began Christmas, 1923 and flowed steadily until May, 1924.

Hbg., June, 1924, was 33 per cent, r.b.c., 3,000,000. Operation June 20. Under gas cervix dilated, curetted with very little tissue obtained. 350 mg. hours of radium used.

Report from patient in Dec., 1924, states that periods are now regular with normal flow and hbg. had gone to 80 per cent, r.b.c., 5,000,000. Report in March, 1925, is that conditions are entirely normal.

*Conclusion.* It would seem reasonable to conclude that the best remedy now at hand for "essential menorrhagia," either due to hyperplasia of the endometrium or to ovarian hyperfunction, is the use of radium in small doses.

### THE MANAGEMENT OF SUMMER DIARRHEA\*

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The laity believes that the second summer is the most dangerous period of the child's life. This belief became established in early times when children were so poorly cared for during the first two or three years. This idea, however, is not borne out by experience, especially if the child has been breast fed for the first few months, and if the subsequent diet has been well regulated in a practical way from the very beginning.

Any summer, however, may be dangerous for any baby of any age. Some prominent physician is credited with the statement that, "in former days the doctor could not take his vacation in the summer time, because of the high incidence of summer diarrhea. Now, because of recent advancement in the management of the artificially fed, the more efficient handling of milk and the spread of infant welfare propaganda over the country, the doctor can best take his vacation in the summer time."

We do not think that this is exactly true. Summer diarrhea is still a very prevalent and a much dreaded disease. While the mortality and the morbidity is not as high as formerly, they are nevertheless still much too high.

Parents are inclined to believe that the summer is over on the first day of September, and then they become more careless of their children's diet. The mortality and the morbidity of summer diarrhea is very much higher in September and October than it is in July and August. This is probably due

to the fact that there is a great change in the metabolic power of the individual, due to sudden changes in temperature. Then in September and October, which are often warm months, the individual child is still affected by his summer diet of fruits, carbohydrates and such dangerous vegetables as corn on the cob. In the eastern part of our state the incidence of summer diarrhea is greater than it is on the coast, and this may possibly be explained by disturbances in body metabolism from the great difference between the midday and the midnight temperature. At this time of year we often see a variance of forty degrees in twelve hours. In October the ice man quits coming and the child's milk is no longer kept cold. We constantly think of September and October as being our most strenuous times in the care of our summer diarrhea cases.

The typical acute intestinal indigestions, and by this I mean summer diarrhea or ileocolitis, come on in a mild way. The first symptoms are usually three or four soft stools a day, usually of a yellow color, sometimes very watery. There may or may not be vomiting and there may or may not be fever. Convulsions occasionally occur, especially if the dietetic indiscretion has been gross. The children are usually playing around and are very happy except for the slight burning of the buttocks from frequent highly acid stools. The mother usually does the right thing at this time, by giving a mild cathartic or an enema, but does the wrong thing in continuing the child's full diet as formerly. If the case is handled properly at this stage, it usually clears up in a very few days. If former full feeding is continued and very little attention is given to the case, the diarrhea increases to fifteen or twenty mucous, green, acid stools a day. Severe vomiting, high fever, complete refusal to eat, very great weight loss from an enormous water loss, extreme prostration and finally coma soon result.

Mothers are always greatly disturbed because of the rapid loss of weight, and the fact that the patient does not desire nourishment. They often insist on feeding the sick child, thinking this to be the only method by which the patient can get well and the loss of weight compensated. The sooner the mother is made to understand that the child has a severe infectious process, involving the whole length of the large and small bowel, and that this intestinal tract is in no condition to accept or digest food, the sooner will she become reconciled to a great loss in weight. The intestinal tract at this time cannot perform its function any more than a

\* Read before the Thirty-sixth Annual Meeting of Washington State Medical Association, Seattle, Wash., Sept. 17-19, 1925.

leg can be walked upon immediately after it is broken.

These cases can really be prevented by proper early management. Breast fed babies seldom get this malady and artificially fed babies, especially those fed on the proprietary foods, seldom miss it. Another factor that works toward its prevention is the use of boiled milk throughout the babies' bottle feeding period. Boiled milk in normal feeding cases is almost a universal practice among the pediatricians of the country.

Education of the parents in regard to the early feeding of their children is diminishing the number of our diarrhea cases. It is difficult, however, to restrain people from feeding berries, semiripened, or box ripened fruit. Ice cream cones, pop, candy and other carbohydrates are dangerous at all times. Many of our cases occur in homes where people are careless as to the presence of flies.

The habit of letting children run through a cold spray on the lawn in their bathing suits is very dangerous. A sudden chilling of the body and the return to hot air produce intestinal congestion and diarrhea.

The question as to whether a laxative should be given at the beginning of this disease is important. If the stools are already loose and green, and the intestinal tract is draining itself exceedingly well, there is no need for a laxative. If the stools are soft, but not very frequent, an initial laxative is extremely important. It is seldom necessary to give castor oil or any other bowel irritant more than once, and that only at the onset of the disturbance. Castor oil repeated daily does not cure and does do harm. If the child is in good condition, and has not yet sustained a great weight loss, a twelve to twenty-four hour fast on water or barley water is extremely important. Enemas every four hours, or even only twice a day, usually clean out the lower intestinal tract. Baths for temperature and lots of fresh air are extremely important at this stage.

After the initial starvation period, milk that has been thoroughly skimmed and boiled three minutes is our only diet. This is given every four hours in large quantities. Water sweetened with saccharine is extremely important, and all starches, sugars and fats are withdrawn from the diet. If there is no benefit from the boiled skimmed milk in twenty-four hours, we often resort to powdered protein milk. This is a simple valuable preparation, and is obtained from the druggist and very easily prepared by the mother. It is usually well taken by

the patient, if sweetened with saccharine. In a few days the stools are of a much better consistency, have become yellow and the child soon goes on to a fuller diet.

If there is great tenesmus, we do not hesitate to give the old fashioned and somewhat condemned remedy of bismuth and paregoric. As a rule our cases never go on to a grave acidosis from the water loss.

The children gradually regain their appetite, and with the inflammation subsiding in the intestinal tract can gradually go on to a better diet; first of broth, then cereal water, then the vegetables. The carbohydrate group, cereals and crackers, should be introduced last. If the water loss during this week or two has become enormous, and the child thereby shows a great loss in weight, and is in a stage of exhaustion and acidosis, it must have extremely large amounts of water. This cannot be taken by mouth in large enough quantities to be of value. The best method of introducing water is by way of the peritoneal cavity.

This is very easily done by injecting a normal saline solution twice a day, and later once a day, into the peritoneal cavity. A large sized needle with dull point is introduced one inch below and one inch to the left of the umbilicus, providing there is no great amount of gaseous distension. If there is a great deal of distension, there is danger of introducing any fluid at this time, as more gas will result. The fluid can be introduced very rapidly, using an ordinary Luer syringe and the result is amazing. In the ordinary case three or four injections of from 300 to 400 c.c. at a time is all that is necessary. In some cases as high as twenty to thirty injections have been used. As the child absorbs this water, the appetite becomes much better immediately, and there is quite an increase in weight.

During this stage of almost coma, stimulants are necessary and we find spiritus frumenti to be the best. Paregoric and bismuth have no place in the treatment at this time. As the child gradually becomes better, there is no danger in feeding skimmed milk or giving a high protein diet (Dutch cheese). You cannot expect the bowel movement to become yellow until milk is given. Many cases are kept too long on cereal water and given too many laxatives, waiting for yellow stools.

#### SUMMARY

Summer diarrhea has no terror for us, if we see the cases early. After an initial laxative and a starvation period the child is put on a diet of boiled

skimmed milk. Poor response calls for an addition of paregoric and bismuth. The skimmed milk is replaced by powdered protein milk only if the cases are resistant. The water-loss cases that enter in collapse, while they are distressing, almost always respond well to the intraperitoneal injection of water.

### BALANTIDIAL DYSENTERY\*

WITH REPORT OF A CASE.

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*Definition.* Balantidial dysentery is a disease of the large bowel, caused by infection with a protozoan, the balantidium coli. The clinical course is insidious and usually very chronic. The first case of human infection was recorded in 1857 by Malmsten.<sup>1</sup>

*Distribution.* There have been only about two hundred cases reported in the literature. These were mostly from colder climates but the widespread distribution is shown by cases having been recorded from Russia, Scandinavia, Finland, Germany, Italy, Serbia, China, Philippine Islands,<sup>2</sup> Nicaragua, Porto Rico and Cuba. In the United States the following have been reported: New Jersey, one case by Gant;<sup>3</sup> Arkansas, three cases by Grey<sup>4</sup> and one by Deaderick;<sup>5</sup> Louisiana, one case by Bel and Couret;<sup>6</sup> Minnesota, one case by Sistrunk.<sup>7</sup> The Rockefeller Sanitary Commission in addition has reported two cases in North Carolina and one in Mississippi.<sup>8</sup>

*Etiology.* The organism is found readily in the stool of infected individuals. It is an actively motile protozoan, measuring from 70 to 200 microns in length. The organism is slightly oval in shape and covered with delicate cilia. The ectoplasm and endoplasm are clearly distinguishable. The organism possesses two contractile vacuoles, a macronucleus and micronucleus situated in the granular endoplasm. The food is ingested through a funnel shaped peristome on the anterior end, and the undigested food particles are extruded through an anus on the posterior end. This cytophyge can be seen only at the moment of expulsion of waste material. Reproduction takes place by binary fission. Under unfavorable conditions the organism may encyst.<sup>9</sup>

As these organisms are a normal inhabitant of the intestinal tract of swine, infection of human subjects probably comes through this source. As the vegetative forms are easily destroyed by the

gastric secretions, encysted forms are undoubtedly the infectious stage. Experimental evidence also points toward this conclusion and that a catarrhal inflammation is usually necessary before implantation of the organism occurs.<sup>10</sup>

*Pathology.* According to Gant, up to 1915 thirty-five autopsies in all had been held on cases of balantidial colitis. The morbid processes varied from a simple catarrhal congestion of the mucosa of the colon to severe ulcerative lesions.

After ingestion and subsequent infection of the colon the organisms burrow to the submucosa by mechanically pushing aside the mucosal cells. In the submucosa reproduction takes place. Congested blood vessels and infiltrated areas, in which eosinophils are plentiful, surround these colonies of organisms. Soon a proteolytic ferment is secreted and necrosis with ulceration follows. Secondary invasion of these ulcers by intestinal bacteria gives them very much the same appearance as old amebic ulcers. In further advanced cases the organisms have been found in the lymph channels and even in the blood vessels. Invasion of the liver has never been distinctly confirmed.<sup>3</sup>

*Symptomatology.* The disease is insidious in its onset and usually assumes a chronic course. The first symptoms are those of a mild diarrhea with alternating periods of constipation. As ulceration occurs, dysenteric features are assumed, with tenesmus, more frequent movements, the passage of mucus and considerable flatus. At this time constitutional symptoms arise, such as loss of weight and strength, digestive disturbances and anemia. On examination one may find distension and tenderness over the colon in addition to those findings suggested by the symptoms.

*Diagnosis.* The diagnosis depends upon finding the specific organism in the stool. Ulcerated areas may be seen in the rectal mucosa, scrapings from which are usually rich in organisms.

*Prognosis.* The course is usually chronic with frequent remissions, with a mortality estimated at 30 per cent.<sup>8</sup>

*Treatment.* Prophylactic treatment consists of confining swine to their proper quarters and personal cleanliness of those coming in contact with swine.

Curative treatment on the whole has been reported as unsatisfactory. Thymol in large doses has been recommended by Phillips<sup>11</sup> and methylene blue by Barlow.<sup>12</sup> Ipecac and emetin have been used but most observers have been disappointed in

\* Read before Whitman County Medical Society, Colfax, Wash., Oct. 5, 1925.

their results. Dutcher<sup>13</sup> in one case obtained a cure by the use of salvarsan intravenously.

Local treatment consists of rectal irrigations of quinine (1-1000), silver nitrate (1-3000), iodine (1-5000) and argyrol. These have all been applied with different results.

McEwen<sup>14</sup> reports a case with symptoms extending over twenty-six years, which after one relapse was apparently cured by enemata of magnesium sulphate.

Jennings<sup>15</sup> reports a case of pernicious anemia, in which the balantidium coli was isolated from the stools. He recommends continued colonic irrigations and in this case with irrigations of quinine solution got at least a symptomatic cure.

#### REPORT OF A CASE

Mrs. H., white, American, age 29, came to me in August, 1924, complaining of a dysentery of ten years' duration, weakness, loss of strength, rapid tiring and tenesmus.

The family history was negative. She had two children, the youngest two years of age. She has had three miscarriages, one of which was followed by the passage of a mass which, from her description, must have been an hydatid mole. Her general health has been good, excepting her long continued diarrhea and its effects.

The condition began about ten years ago, while the patient was living on a farm where large numbers of swine were raised. It gradually increased in severity until for the past three years she has had from four to ten liquid, foul smelling bowel movements each day.

Physical examination showed a rather poorly nourished woman who appeared and acted tired. The examination was essentially negative except for a moderate anemia. No eosinophils were noted. Examination of the stool showed large numbers of actively motile balantidium coli.

*Treatment*—Thymol and salol were tried with no benefit. On Aug. 15 17 c.c. of 1 per cent mercurochrome—220 soluble were given intravenously. Mercurochrome was tried because the author had observed the diarrhea and stained stools in pneumonia patients treated with mercurochrome. Following this medication there was a decided diminution in the number of organisms found in the stool but there were many still present. Because of the severity of the reaction, mercurochrome was not again used. On Sept. 14 .4 gm, neosalvarsan was administered intravenously, on the 21st .6 gm, and on the 28th .6 gm. Following the second dose no organisms could be found in the stool, nor have they been found on repeated examinations during the past year. Acriflavine 1-5000<sup>16</sup> was used as a colonic irrigation and seemed to help considerably.

The patient had the first formed bowel movement following her second dose of nearsphenamine she had had in ten years. At this time it dawned on her that it was not normal to have griping before her bowels moved.

She has gained in weight from 112 to 128 pounds and states that she feels quite well. She now has one or two formed movements each day unattended by any pain.

The author recommends the use of arsphenamine or nearsphenimine intravenously and also the use

of stovarsol<sup>17</sup> by mouth, the latter having been used with success in amebic dysentery.

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#### PELLAGRA

SECONDARY TO VOLUNTARY INANITION.

REPORT OF A CASE.

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During the present year there has been studied in the Portland Medical Hospital two cases of pellagra, seemingly secondary to a voluntary restriction of the diet in association with chronic gastrointestinal lesions.

The first patient had seemingly chosen a deficient, largely puree diet because of a rectal stricture. That condition was operated upon by Drs. Joyce and Seabrook and, because of the rare association of rectal stricture and pellagra, the case was briefly reported by them in the June issue of this journal. The pellagrous skin lesions first appeared about a

month after the surgical removal of the rectal trouble and after the patient had shown some improvement in her general physical condition. This improvement was, however, of brief duration and, coincident with the appearance of the dermatitis, a definite dementia supervened in which state the patient still lives.

The second case studied has certain interesting points of similarity to the one mentioned above. The recognized evidence of pellagra made its appearance several months after the voluntary restriction of the diet on the part of the patient, and also after a considerable improvement in her physical condition had been brought about in the hospital. Because of the interesting history and course of the patient and because pellagra is rare in this section of the United States, we have thought it proper to place it on record.

Mrs. K. aged 61, a housewife, living under the most favorable circumstances in regard to her home surroundings, became suddenly ill in July, 1924, with a sense of choking and difficult breathing, followed soon by chest and upper abdominal pain, nausea and vomiting. The pain was first thought to be of cardiac origin. Several similar attacks of pain had been experienced about seven years before. It was of rather long duration and was not attended with the fear of dying. No corroborative signs of heart disease were recognized and, as the vomiting and abdominal distress continued, the probability of a chronic gallbladder disease was considered.

The patient became psychically depressed, refused to eat because it gave her distress, her bowel became alternately constipated and loose, and finally loose at all times, so that from eight to twelve watery stools, containing considerable mucus, were voided each day. Under the solicitous influence of the family, and against the wishes of the physician, she became a morphine addict. One-sixteenth to one-fourth grain of morphine was given to her hypodermically each day for months. From the beginning of the illness to her entrance into the hospital, April 27, 1925, her weight had been reduced from 129½ pounds to 77 pounds.

The patient's past history was not important, aside from the fact that she was of a moderate asthenic type of build and always of a nervous temperament. She had had a hysterectomy performed in 1905 for uterine fibroids, and her tonsils were removed in 1917. She gave an indefinite history of rheumatism and a questionable history of typhoid fever in earlier life. She is the mother of two children.

Examination in hospital showed, in brief, a pale, sallow-skinned, emaciated, elderly woman of general asthenic build. No septic foci were found in the head. She wore artificial dentures. The superficial lymph glands were not noticeably enlarged. The thyroid was small. The lungs were free from adventitious sounds. The heart tones were clear in character; there was no cardiac enlargement. In stereoscopic chest films the arch of the aorta was seen to be somewhat widened; the cardiorespiratory ratio was 45.2. There was no evidence of tuberculosis. The blood pressure was low and the abdomen was moderately bloated and soggy on palpation. The spleen was not palpable. The colon was spastic and tender. The sigmoidoscopic examination showed a pale mucous membrane with injected points and covered with considerable mucus. The hemorrhoid

area was irritated and there were small hemorrhoids which had evidently bled at times. Stomach analysis through a two hour period showed the complete absence of free hydrochloric acid and combined acid from 34 to 40 to 30 during the same time; no blood or other foreign substances were present. Many stools were examined when the patient was not on a meat diet and showed little or no occult blood. The urine contained traces of albumin. The urine Ph was 6.25. The blood examination on entrance was Hg. 73 per cent; red cells, 3,584,000; C. I. 1.04; Vol. I. 1.16; Icteric I. 6.6; white cells 8,200; polymorphonuclear cells 84 per cent; no eosinophiles. The urea nitrogen was 12.5 mg.; plasma chlorides 428 mg.; alkali reserve 80. Wassermann negative.

Later, on July 9 and 10, when the patient was stronger and the bowel function quite normal, the roentgenologic examination of the abdomen showed normal findings. There was no indirect evidence of gallbladder disease. Direct films of the gallbladder were not taken.

The progress of the patient in the hospital was very interesting. It was with the greatest difficulty that she could be persuaded to take any food by mouth. Tube feeding and rectal feeding had been attempted at home. She refused to masticate her food and during the first week persistently refused to accept any food that could not be swallowed without chewing. Mentally she was quite clear. The hypodermics of morphine were replaced by those of sterile water and she was given deodorized tincture of opium in capsules which later were withdrawn without her knowledge. Hydrochloric acid and pancreatin were given to her.

Her food intake during the first two weeks averaged from 700 to 1000 calories per day. On the 14th day she took 150 grams of carbohydrate, 20 grams of protein and 27 grams of fat. She was still very weak, suffered much abdominal distress and had five semi-liquid stools. Her tongue and mouth were sore. She was first weighed on the 22nd day—77½ pounds. On that day she ate 1560 calories; 108 grams of carbohydrate, 48 grams of protein and 104 grams of fat, and had eight liquid or mushy stools. Her diet consisted mainly of purees and gruels with some fruit juices; foods that she could drink without mastication because of the soreness of the mouth. She did not take kindly to milk but it was forced. On the 27th day her weight was 80¼ pounds and her food intake was 2014 calories.

On that day there appeared a patchy dark brown discoloration on the dorsum of each hand. It progressed slowly in a bilaterally symmetrical manner, becoming scaly, until it covered the entire backs of the hands and fingers. The plantar surfaces remained soft, crinkled and pink. Having in mind the possibility of pellagra, more milk and fruit juices were added to the diet. The patient's general condition had greatly improved and continued to do so. There was less nervousness, less abdominal distress. The mouth had nearly healed, there were three and four mushy stools per day, and she was taking graduated walks out of doors. But the condition of the hands slowly progressed. On the 44th day the patient was told that she had pellagra, a condition probably due to a deficiency diet of her own choosing and that she must cooperate more in regard to her diet in spite of possible increased distress. Dr. Kingery, of the department of Dermatology of the University, concurred in the diagnosis.

At this time the patient's weight was 88½ pounds, and her calorie intake 2439—191 grams of carbohydrate, 61 grams of protein, and 159 grams of fat. To her diet there was now added 100 grams of fresh beef, one liter of milk and four eggs per day, following the work of Voegtlin.<sup>1</sup> Her general condition continued to improve and at the same time a gradual, progressive clearing of the hands took place.

She left the hospital on the 79th day, weighing 106½ pounds, much improved in health. Two soft formed stools were usually passed per day. The mouth was healed and the hands were practically cleared. Her diet now consisted of 296 grams of carbohydrate—76 grams of protein and 214 grams of fat, or about 3400 calories. At the present time, two months later, the patient's weight is 116 pounds and there has been no relapse of the pellagrous symptoms.

An analysis of the above case would justify the conclusion that the early nervousness, the stomatitis and the looseness of the bowel were not pellagrous symptoms for many months. They were secondary to an acute illness and continued because of insufficient control. When finally the pellagrous dermatitis appeared and the patient was told of her condition and its probable meaning, cooperation was obtained, with the result that an early return to fairly good health ensued. The dermatitis itself did not appear until considerable improvement had taken place in the general physical condition of the patient and she had been on a moderately liberal diet for some time.

1. Quoted by McCollum: *The Newer Knowledge of Nutrition*, 2nd Edition, p. 284.

### TRYPANOSOMIASIS\*

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Keizer Brothers Clinic

The study of trypanosomiasis may be considered in the territory as far north as Oregon as rather far-fetched. Yet, when we stop to consider that the schizotrypanum cruzi, the causative organism of schizotrypanosomiasis or Brazilian sleeping sickness (Chagas disease) has been isolated as far north as latitude 41 degrees (and the same south of the equator), or rather thirty miles above Eureka, California, and the rapid and common communication and traffic that exists today, as well as the class of immigrants that we have, it does not take a long stretch of imagination to make such diseases possible. Not only would it be possible for a sporadic case to develop, but the transportation of some of the varieties of conorhinus megistus (of which there are about forty) is very possible. These insects are of the beetle family and are very ferocious feeders, and on account of their ferocity and the custom they have of attacking the face and neck, are called by the natives "Barbiero." Both male and female of these insects are carriers. It is believed by some investigators that some varieties of dog fleas may be carriers but this has never been demonstrated to our satisfaction.

Often it is very difficult to demonstrate the trypanosome in the circulating blood or spinal fluid of the patient, but by the inoculation of rats or guinea pigs sometimes it can be found, as will be observed in the case of the Thornton girl. In fact, I believe that the inoculation method is by far the most satisfactory. In the Thornton case daily blood examinations were made for ten days with failure, while the blood of the inoculated rats gave us our positive diagnosis.

It has been my privilege to sit in on four cases, in which there could be but little doubt as to the diagnosis. For the picture of the case is so striking and so distinctly follows the description of the authorities, that there can be little room for mistake. The only two other conditions that simulate trypanosomiasis are encephalitis lethargica and syphilitic encephalitis. However, neither of these conditions closely simulates trypanosomiasis. The personal history and the Wassermann report will generally make the diagnosis for syphilitic encephalitis and the symptomatology of encephalitis lethargica is so markedly different in many ways that there should be no confusion.

The three cases of encephalitis lethargica that I had the opportunity to study in 1923 all showed a more sudden onset, neuritis, double vision, spinal pressure as high as 30 cm. and not less than 24 cm. rise, while in Chagas disease it is not above 16 cm. Generally in encephalitis lethargica the patient lies on the back, cheeks are flushed and uni- or bilateral sweating is common. The slumber is not always profound and there is often a restless delirium. The temperature does not go extremely high until toward a fatal termination. There is generally a possibility to rouse the patient during the early part of the attack. Reflexes are not always entirely lost. The spinal fluid generally contains excess of cellular elements and in our fatal case we were able to isolate pseudodiphtheritic bacilli, and in one case of recovery, pneumococci in the spinal fluid.

In trypanosomiasis the onset is insidious, the temperature high, 40° or more C. at the onset, and lowers at the termination. The slumber is profound and constant. No double vision, no reflexes, enlarged lymphatic glands, pallor, anemia, and often a possibility to isolate the trypanosome. Apparently there is no medication of value.

You will notice in the case reports some form of arsenic was used but this was done simply because that is the only remedy with any standing in the treatment of the African type of trypanosomiasis,

\* Read before the Fifty-first Annual Meeting of Oregon State Medical Society, Medford, Ore., Sept. 2-4, 1925.

atoxol being the favorite. Had I the opportunity to treat another case, I should try the intravenous injection of tartar emetic, after the method employed by Yorke.

Case 1. August 2, 1922. Nogales, Sonora, Mexico. Calle Jurez Mendez, boy, age 14. Came with Dr. A. L. Gustetter, Nogales, Arizona. The boy had been sleeping or semiconscious for more than a week. Temperature taken by us was 40.3° C., pulse 120. Slow respiration. On our first visit it was most impossible to arouse the patient. All reflexes were gone, with the exception of a very slight solar reflex. Blood drawn for Wassermann and patient put on 15 gr. urotropine per day.

Aug. 3, generally the same. Temperature 40°, pulse 130. Very sonorous breathing. Treatment continued. Aug. 4, return on Wassermann negative. Sleep more profound, and breathing more sonorous. No nutrition. Diagnosis, trypanosomiasis. One gram sodium cacodylate intravenously administered. The same each day for four days, then urotropine suspended.

Aug. 7, drop in temperature to 39.2°. Slight improvement in respiration, cacodylate one gram every second day for three doses. Aug. 9, temperature 38.6°. Patient took some liquid nourishment. Aug. 20, some improvement. Taking small amount of nourishment at intervals. Can be awakened for two or three minutes at a time. Temperature from 36.2° to 36.8°, pulse from 90 to 100.

Complete recovery on Sept. 15. *Note:* All the females in this family were luetic.

Case 2. Nogales, Sonora, Mexico. Calle International. August 10, 1922. Baby, 16 months old. Case came with Dr. Fernando Priego, Nogales, Sonora, Mexico.

This case reported sleeping for three weeks. We were unable to arouse at all. Temperature had ranged from 38.6° to 40.5°. Pulse ranged about 160. Respiration slow and sighing. Reflexes gone.

Diagnosis, trypanosomiasis, made by Drs. Priego and Gamez and confirmed by myself.

No history or lues in the family. Spinal puncture was made in two containers and sent to City of Mexico, one for Wassermann and one for trypanosomiasis. Child given .06 gram injection of neosalvarsan in fontanelle and .01 gram doses of urotropine. Child died after four days.

Report on spinal fluid, Wassermann negative. Trypanosomes obtained from the blood of an inoculated rat.

Case 3. Nogales, Sonora, Mexico. September 9, 1922. Hospital Municipal. Dr. Fernandez. Child six years three months old, brought into the hospital one week before.

History of having been drowsy for ten days and had been getting progressively worse since admission to the hospital. Temperature had ranged from 37.2° to 40.8°, pulse about 80. Slow sonorous breathing. Wassermann had been taken and was negative. Spinal puncture for pressure showed 15 cm. rise in the tube. Liver and spleen enlarged. An enlargement of cervical glands as in former case. The reflexes were absent. Involuntary passage of the urine and stools.

Administered .2 gram of neosalvarsan Sept. 17. Was given a second injection of .3 gram of neosalvarsan but with no apparent response, except a lowering of the temperature to 38° or 38.5° and a little better breathing. Sept. 22, another .3 gram of neosalvarsan but patient died Sept. 28. We made the diagnosis trypanosomiasis but no laboratory diagnosis in this case.

This case came from the same block as Dr. Priego's case in Calle International. He thought

the trypanosomes came from the fleas on dogs but I am of the opinion that they were carried by beetles.

Case 4. Thornton girl, Hudgins St., Nogales, Arizona. Eight years of age. Case came first November 3, 1922.

Had been sick for one month, treated for enteric fever. First fifteen days had been dormant and sleepy. Abdomen was flat. No pain. No diarrhea. No tenderness, no reflex, almost impossible to arouse. Occasional vomiting. Pulse 84, respiration 16, temperature from 36.7° to 37.3°. No murmurs at the precordial area, no rales. Insidious onset. Diagnosis, Brazilian trypanosomiasis.

Treatment: Potassium iodide, sodium cacodylate .5 gram intravenously. Child died November 20. In all this case had six intravenous injections with no apparent improvement whatsoever.

The blood from this case was forwarded to the University of Arizona daily but did not reveal trypanosomes. However, an inoculated rat revealed trypanosomes in the blood. This was undoubtedly the most typical case that I have in my collection and very interesting to study. The spinal pressure findings of three different cases were 15, 15 and 10 centimeters respectively. The cardiac tracings taken a few minutes before death are very interesting, noting the terrific nervous irritation which accompanies this disease, even in the face of the fact that there is profound slumber all of the time.

## THE PRESENT DAY TREATMENT OF DIABETES\*

INDICATIONS AND CONTRAINDICATIONS FOR VARIOUS THERAPEUTIC MEASURES.

I. C. BRILL, A.B., M.D.  
PORTLAND, ORE.

In the last three or four years the treatment of diabetes has been greatly simplified, and the introduction of insulin has enabled the general practitioner to treat diabetes with a considerable degree of success. Yet there still appears to exist some confusion as to the indications and contraindications for certain well established therapeutic measures in the management of diabetes. It is the purpose of this paper to offer some suggestions which may, in some degree, clarify this confusion.

### INSULIN

It has been frequently asserted that insulin has a definite metabolic value in terms of glucose, to wit, that one unit of insulin can metabolize one to two grammes of glucose in the body. On the basis of this assumption it has been claimed that the dosage of insulin in human diabetes can be determined mathematically, when the patient's tolerance is estimated in conjunction with his total glucose

\* From the Medical Clinic of the University of Oregon Medical School.

requirement in the maintenance diet. That is to say, a patient whose glucose requirement is one hundred grammes and who has a tolerance of only sixty grammes (as shown by the excretion of forty grammes of glucose in the urine), will require approximately twenty to forty units of insulin a day to keep sugar-free on his maintenance diet. Whatever merit there may be in the theoretical considerations involved, in my experience it was not found possible to apply any such mathematical determination of insulin dosage in the practical management of human diabetes. This appears to be due to the fact that both the patient's glucose tolerance and the metabolic value of the insulin unit are variable factors.

In attempting to determine the glucose tolerance in uncomplicated cases of diabetes mellitus, it is found in nearly every instance, when the patient is kept on a maintenance diet without insulin, that the tolerance for glucose shows a definite tendency either to increase or to diminish. In the chronic well-nourished or mild diabetic, the administration of a carefully balanced maintenance diet generally results in a continuous daily improvement in the tolerance, with a gradual clearing of the glycosuria. On the other hand, in the acute youthful and undernourished diabetic, a definite tendency to downward progress is noted with a rapid lowering of the tolerance and a continuous increase in the urinary glucose.

#### EFFECT OF INSULIN UPON THE BLOOD SUGAR LEVEL IN DIABETES

Patients	A	B	C	D
Fasting blood sugar level.....	.540	.510	.326	.353
Units of insulin given.....	10	10	20	20
Blood sugar ½ hour after insulin .....	.465	.300	.317	.....
Blood sugar 1 hour after insulin .....	.395	.265	.260	.166
Blood sugar 1½ hours after insulin .....	.387	.200	.202	.102
Blood sugar 2 hours after insulin .....	.353	.168	.198	.....
Blood sugar 2½ hours after insulin .....	.342	.....	.....	.111

A and B represent two patients of approximately the same weight examined in Experiment 1. C and D represent two patients of approximately equal weight examined in Experiment 2.

The metabolic value of insulin in human diabetes is likewise a variable factor. The accompanying table gives the results of two experiments which tend to show that the effect of insulin upon the blood sugar level in diabetes varies with different patients. In each experiment two patients of approximately equal weight and whose fasting blood sugars were of nearly the same level were chosen. Both patients in each experiment respectively received ex-

actly the same dose of insulin. The blood sugar was then determined at half hour intervals. As may be seen from the tabulated results, the effect of the insulin per unit varied markedly in each instance. It is apparent from the above considerations that an estimation of insulin dosage, based on two such variable factors as the patient's supposed tolerance and the metabolic value of insulin, is apt to be quite misleading.

The method for gauging insulin dosage followed at this clinic is very simple and has proved quite satisfactory. At the outset the cases of diabetes are separated roughly into two groups, (1) the mild, well-nourished or so-called chronic group which includes most patients at or above middle age, and (2) the severe, undernourished or the so-called acute group which includes most patients under middle age. Patients in the first group are generally treated without insulin. Depending upon the degree of overnutrition, these patients receive a basal or a subbasal diet, a slight loss of weight being sought. As the urinary and blood findings return to normal and the desired loss of weight is accomplished, the diet is gradually increased to a maintenance level. The results obtained with this class of patients are generally most gratifying.

The management of the cases in the second group presents a more difficult problem. These patients, already undernourished, are placed on maintenance diet from the outset, and insulin is administered at once. No time is thus lost in an apparently useless attempt to determine the glucose tolerance. Depending upon their blood sugar level and upon the degree of acidosis present, these patients are given from ten to forty units of insulin before each meal during the first twenty-four or forty-eight hours.

The subsequent insulin dosage is determined by examinations for urinary glucose before each meal and by determining the fasting blood sugar level once or twice a week. Thus, while the patient is kept on a maintenance diet, sufficient insulin is given to keep the urine free from sugar throughout the day, and the fasting blood sugar at a normal level. The appearance of a trace of sugar before any meal serves as an indication for increasing the dose of insulin (generally by five units). On the other hand, a fall of the fasting blood sugar below the normal level, or the development of symptoms of hypoglycemia at any time during the course of the treatment serves as an indication for diminishing the dose of insulin. This plan has proved very satisfactory, and it was frequently found possible

to reduce the insulin dosage in a given patient, as his tolerance appeared to increase, from twenty or thirty units three times a day to ten or twenty units once a day and finally discontinue the insulin altogether.

#### STARVATION AND UNDERNUTRITION

Aside from its historic interest, starvation no longer has a place in the therapeutics of diabetes. Its sole function (rendering an obstinate case sugar free) is now more easily and far more profitably accomplished by the use of insulin. The principle of undernutrition, however, is just as valuable today as it was at its first introduction by Dr. Allen ten years ago. But, like other therapeutic measures, its greatest usefulness is realized only when employed upon proper indications. It has already been pointed out that diabetes patients may be divided roughly into two groups: the undernourished, and the obese. In the former group are included most of the cases of diabetes in the young, especially children. The latter group is composed largely of patients at middle age or over, with a tendency to a mild and chronic course. It is in this group of patients that a subbasal diet leading to a moderate degree of undernutrition brings the best results. In this type of patient practically complete cure may in some instances be obtained by dietary measures alone, by a judicious application of the principle of undernutrition. On the other hand, in the young and already undernourished patient the prolonged application of the principle of undernutrition is apt to lead to disastrous results.

#### THE MAINTENANCE DIET

The maintenance diet is the ultimate goal in all cases of diabetes. In the undernourished group and in practically all cases of juvenile diabetes the maintenance diet must be instituted from the beginning, the process of desugarization being accomplished by the use of insulin, rather than by further increasing the state of undernutrition. The maintenance diet in any given case is determined at the outset by estimating the patient's basal caloric requirement and adding to it twenty to thirty per cent of the total calories, depending upon the patient's activities. The number of grammes of protein in the diet is determined by the patient's weight (from  $\frac{2}{3}$  to 1 gramme of protein per kilogramme of body weight for the adult patient, and from  $1\frac{1}{2}$  to 2 grammes of protein per kilogramme of body weight for children). The number of grammes of fat and of carbohydrates are determined by the Woodyat method. The inability to administer such

a maintenance diet to a diabetic of the undernourished group, or to any diabetic at the end of the course of treatment without causing glycosuria, constitutes a rational indication for the use of insulin. 700 Journal Building.

#### TWENTY-FOUR HOURS OF A GENERAL PRACTICE\*

WARREN L. HUNT, M.D.

KLAMATH FALLS, ORE.

From the ranks of general practitioners it would be presumption on my part to advance information in a didactic way upon any subject better known to my hearers than to myself. In this age of specialization the work of general practice is apt to seem all too ordinary, and to the recent medical graduate quite unattractive. Not unlike the majority of my hearers, I am here to listen and learn the facts garnered by tireless industry and subtle deduction as presented in the thesis of the specialist. I am here to applaud his effort and to apply his methods on the firing-line.

The general practitioner, busy from morning till night, sketches through his journals, and only when he has a genuine problem on hand, that is, when a case is becoming more and more serious instead of improving with the reliable remedies that he has learned to depend upon, does he go back to his texts in the effort to get more light. Therefore, while rich in the experience of give and take with disease, all too rarely does he jot down the particular maneuver that enabled him to conquer his adversary, and he alone knows the measure of his own resources.

So the general practitioner is misjudged continually by all except his fellows in medicine who have been through the mill and are on their feet solidly, still practicing in the same locality where they hung out their shingles after graduation. For too many failures in thwarting the grim reaper makes a man tremble in his shoes, and think about going somewhere else and making a new start.

But one cannot lose all that time and it is the man who sticks that wins. The bump of persistence and hanging on, hoping against hope and taking advantage of every new development in the battle against disease gives a man confidence finally, and it takes greater and greater human disasters to disturb his equilibrium and make him distrust his own ability.

\* Read before the Fifty-first Annual Meeting of Oregon State Medical Society, Medford, Ore., Sept. 2-4, 1925.

To be sure, there are times when the physician realizes his own galling impotence. The dilating pupil and sightless eye, the blanching features and chilling extremities apprise his glance and mind that a human catastrophe is at hand. He is filled with awe and solemnity in the realization of defeat. He ponders over the occurrence and circumstances, searching himself for a sin of omission in his treatment and resolves that the next time he will be better prepared. This is the gruelling process that will make him more valiant, more heroic, more painstakingly careful in the future, when dealing with human injuries and disease. He feels that the best drugs, the best instruments and the best of care are none too good, if the condition is important, placing the value of human existence far higher than any layman's viewpoint. Out of this desire to thwart disease and stabilize health grew the inspiration for trained nursing, dentistry and hospitalization, as well as chemical and biologic laboratories.

The horizon of the general practitioner is ever widening, ever moving onward, as he looks forward with far-seeing eye and alert mind. Specific medication in the treatment of disease has taken the place of symptomatic dosage, and likewise treatment must give way to disease prevention.

The field of general practice lays wide the path of originality and initiative. The versatile intelligence finds a daily test and one learns to do great things by doing them. The difference between life and death is only a breath and he who preserves the breath of life can truly say he has saved it.

From a mind full of tempting recollection, personal instances of thrilling encounters trail humbly forth from the hours of a general practice—puerperal eclampsia, tubal pregnancy, cardiac asthma, leaking gastric ulcer, sarcomata and carcinomata, pulmonary hemorrhage, cerebrospinal meningitis, pulmonary embolism, cerebral thrombus, leakage and embolism, gunshot wounds of the abdomen, avulsion of extremities by explosion of dynamite, bullet wounds of brain and lung, lobar pneumonia, ruptured appendices, strangulated hernia, fracture of spinal vertebræ, hemophilia, drowning and asphyxiation.

These human adversaries have had their hours. They have claimed their victims while I prayed for better weapons of defense. If such exist I want them. Speaking for a legion of general practitioners of general medicine, I want better methods, better antidotes, better instruments and more specialists. Antitoxin, salvarsan, Carrel-Dakin solution

and insulin find welcome place in the doctor's armamentarium, and there is other space yet to be filled.

Today cholera infantum, scarlet fever, and pertussis disturb the peace of mind of parents and physicians alike in Klamath Falls, and their unrelieved complications have taken their toll of life. The weekly state health bulletins carry to the general practitioner not only current statistical information of the state-wide prevalence of disease but timely discussion of preventive medicine. It is a commendable effort in the organization for preparedness of physicians generally against any relaxation of vigilance toward menacing diseases.

It has been said, "art is long and time is fleeting." It may well be said, "the hours of the general practitioner of medicine are long and often untimely." He alone, in his night watches against destructive disease, knows the value of the element of time, his ally. To tide the patient over a certain length of time brings ultimate convalescence and disease has run its course.

In selecting the topic of this paper it had originally been my purpose to detail the arising conditions of one strenuous day. But the question "what day" set me off my course. All days are notable, it seems to me, in the physician's crusade to repel death, as he stalks in our midst to snuff out life. It is a great game and finally a losing game, but it is a fine and glorious sentiment to be able to say at the last, "I have fought a good fight."

The laboratory investigator along medical lines is an enthusiast in solving this or that detached problem. I wish him more power in his attempt and brilliance in his ideas. I do not envy him, for he misses the direct application of his results.

The changing panorama of familiar and unfamiliar injury or disease flits by the gaze of the physician in general practice, keeping him interested and eager. His perceptions are quick and his responses active. The application of scientific resources, with their wonderful possibilities for rendering the greatest human aid, make the full, busy hours of a lifetime of general practice worthwhile and desirable.

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EPITHELIOMA AND THE CHRONIC VARICOSE ULCER. Leila C. Knox, New York (Journal A. M. A., Oct. 3, 1925), concludes as follows: There are accurate reports of only fifty-nine epitheliomas arising in chronic varicose crural ulcers. The number of the reported cases is about the same as those arising in scars and fistulas. These occur almost exclusively between the ages of 40 and 60, run a slower course than other squamous cell epitheliomas, and probably lead to metastasis later. They are in no sense benign. It is probable that chronic dermatitis more than the varicosities and altered blood supply alone incites the condition.

# NORTHWEST MEDICINE

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## EDITORIAL

### IRON IN TREATMENT OF ANEMIA

For some years there has been a controversy as to the part played by the administration of iron in the treatment of anemia. One group of experimenters has reported that animals, anemic from a diet of rice and milk, accumulate no more hemoglobin from iron in their diet than the controls without it, and that they have no more total iron in their bodies. Other reports have been to the effect that medicinal inorganic iron is both absorbed and utilized in hemoglobin formation, and that young animals, stunted and anemic from a diet of rice and milk, gain in hemoglobin and growth on the addition of medicinal iron. In order to determine the facts from these conflicting statements, Williamson and Ets\* have conducted extensive experiments on rats and dogs for the purpose of ascertaining the results on the hemoglobin content of the administration of inorganic iron under varied conditions.

Equal numbers of rats were placed on iron-free and iron-containing diets. They were killed after periods of from four to six months, when it was determined that there was practically no difference in the hemoglobin content of the two groups, although the iron-fed had more iron in their bodies. Rats, bled 28 per cent of their blood volume, were divided into two groups and fed, one an iron-free and the other an iron-containing diet. The bleeding and feeding were repeated at two subsequent five week intervals. At the termination of each period there was no difference in the hemoglobin of the two groups, although the iron-fed animals presented an accumulation of iron in their livers and spleens. Further experiments were made to test the value of medicinal iron introduced hypodermically. At the end of five weeks the hemoglobin content in the two groups was practically identical, the storage of iron in the livers and spleens of the iron-treated animals being very great. Similar experiments conducted on dogs produced similar results, with the additional information that deposit of iron was

found in the marrow of the long bones as well as in livers and spleens. Experiments were further conducted on groups of dogs which were bled 25 per cent of their blood volume. After periods of ten days and five weeks they were bled like amounts. Then half of them were treated with intravenous iron injections three times weekly, otherwise treatment and diet of the two groups being identical. Examinations after seventeen and thirty-four days disclosed there was practically no difference in the hemoglobin content of the two groups, although there was an enormous deposit of iron in the livers and spleens of the iron-treated animals. It was further noted that dogs which had been extensively bled, and given a partial meat diet, presented a marked hemoglobin increase. To determine whether the young of mothers fed on iron-free diet presented a lower hemoglobin content than those of mothers receiving medicinal iron, two groups of rats were fed diets, one iron-free, the other containing iron. Blood obtained on the twelfth day of life indicated substantially no difference in hemoglobin of the two groups of offspring.

From these experiments the authors declare it evident, even in the presence of an urgent need of hemoglobin, as from severe hemorrhage, iron in the diet or by injection fails to supply the need. While iron, administered by various methods, was stored in the liver and spleen, it was incapable of being converted into hemoglobin. The efficiency of food iron is very pronounced. Animals on a diet containing only food iron rapidly recover from hemorrhages that remove an amount of iron greater than exists in the entire body outside the blood. They conclude, therefore, in the light of the foregoing experiments, that the administration of inorganic iron has no therapeutic value in anemia.

### MEDICAL RESERVE CORPS MOVEMENT

One of the most impressive lessons learned from the World War was the condition of unpreparedness of our country in the face of an emergency affecting our national welfare. In order to forestall such a condition at any future time, the officers of the war department are in the process of establishing a skeleton army in the Reserve Corps, a vital feature of which is the Medical Reserve Corps. An effort is being made to persuade a suitable number of physicians to enlist in this corps with no probable prospect of active service, but as a reserve in case of such an emergency as came upon us in the recent war.

While the Reserve Corps of the Medical De-

\* Williamson, C. S., and Ets, H. N.: The Value of Iron in Anemia. Arch. Int. Med. 36, 333, Sept., 1925.

partment of the Ninth Corps Area, which includes Oregon, Washington, Idaho and Montana, is still far short of medical officers, the Dental Branch has not only filled all its vacancies in the Reserve Corps, but contributed a surplus of nearly fifty per cent beyond the requirements of the Ninth Corps Area plans. The Medical Administrative and Sanitary Reserve Corps have likewise filled their quotas. Most of the quartermasters and chaplains needed to further officer the Reserve Corps hospitals have already been obtained, and the few vacancies remaining will shortly be filled.

Only the medical profession has failed to measure up to its responsibilities. The personnel of medical reserve officers enrolled is not half as large as it should be. Yet the whole plan of reserve medical service, and the operation of its medical units, is built about the medical profession. Why is it that the medical profession has lagged behind, when the other branches that work with it in its patriotic and humanitarian mission have gone "over the top"?

In order to keep this matter before the profession, and enlist the personal interest of men who are willing to engage in this patriotic service, each month in this journal will appear information regarding this movement under an appropriate heading, the first installment of which will be found in another column of this issue. It is the intention to assist the officers of the Ninth Corps Area in their plans to fill the Medical Reserve Corps, and maintain the interest of the profession in this form of patriotic endeavor.

#### SOCIETY MEETINGS REPORTS

This issue of this journal and those of recent months have presented reports of the transactions of the annual meetings of the state associations, of which it is the official publication. While some of these reports may be of little interest to members of other associations, they are of great importance to those of the individual organization by reason of furnishing a permanent record of proceedings and transactions. This illustrates the value of publishing such reports of medical meetings. This statement is likewise applicable to meetings of county societies. The publication of the minutes of such a society is an announcement to the medical world that it is alive, and is indicative of the extent to which as an organization it aims to keep abreast of medical advancement.

One objective of this journal is to provide a me-

dium for the publication of proceedings of county societies as well as of the larger societies. Naturally such action is impossible, unless the material is provided by the individual society. It is fitting, therefore, at this time to repeat the declaration which has appeared in these columns on previous occasions, that reports from county societies will be published, if received at the editorial office in sufficient time before going to press. The secretary should aim to mail such reports by the twenty-fifth of the month, in order to insure their publication in the following month's issue. It is believed that the monthly publication of such proceedings will prove advantageous to any county society.

#### A NEW MEDICAL JOURNAL

Notwithstanding the apparent oversupply of medical journals, and the belief that a new one should hesitate to enter this well stocked field of journalism, *The American Heart Journal*, whose first issue appeared in October, seems to fill a unique field with no competitors in its special sphere. The newly acquired information regarding cardiovascular disease, resulting from investigations by specialists from many lands in this line of work, has revolutionized the treatment of diseases of the heart. In all medical journals of recent years have appeared numerous papers dealing with this newly acquired knowledge, which has been read with avidity by every physician intent upon providing his cardiac cases with the most potent means of relief. The editors of this journal believe it will meet the demand of physicians throughout the country for a periodical covering diseases of the heart and circulation, and that it may prove a factor for the better education of the medical profession in matters relating to diagnosis, treatment and prevention of heart disease. It is stated that the journal is designed not merely to serve heart specialists, but the large group of general practitioners who are endeavoring to keep abreast of the modern knowledge of the heart and its disorders.

The journal is published under the editorial direction of Dr. Lewis A. Conner, of Cornell University Medical College in New York City. The editorial advisory board comprises a group of the most renowned internists from the leading cities of the east and middle west. This journal will undoubtedly meet with a warm reception on the part of all physicians who have the opportunity of reading this initial issue.

## MEDICAL NOTES

### WASHINGTON

**MEDICAL SHORT STORIES.** A letter has been received from Dr. Harold Hays, 22 West 74th St., New York City, stating that he is compiling a collection of short stories written by doctors, some of which are published under assumed names. If any readers of this journal have published such stories, or know of any written by other physicians, Dr. Hays would like the same to be referred to him for the purpose of future publication.

**LANE MEDICAL LECTURES.** These lectures were founded in 1896 by Dr. Levi C. Lane of San Francisco. A course has been delivered every year since that date by some of the most distinguished members of the profession from all parts of the world. The course this year will be given by Dr. Vittorio Putti, professor of orthopedic surgery, University of Bologna, Italy. The lectures will be delivered during five successive evenings, beginning November 9, at Lane Hall, Stanford University Medical School. The lectures are free to any members of the profession desiring to attend.

**THE MEDICAL WOMAN'S JOURNAL.** This journal, published in Cincinnati, Ohio, should be of special interest to women physicians. The contributed articles are from women physicians of the country dealing with a great variety of subjects. It is well edited and attractively published.

### OREGON

**CLATSOP COUNTY MEDICAL SOCIETY** held its annual meeting at Astoria, September 26. The following officers were elected for the ensuing year: Dr. E. Neulen, of Astoria, president; Dr. A. G. Allen, Astoria, secretary, Dr. A. S. Kleger, Astoria, treasurer.

**FORMER HEALTH OFFICER HONORED.** Word has been received that Dr. George Parrish, formerly health officer of Portland, now holding a similar position in Los Angeles, was recently presented a gold badge by the employes of his department, the presentation being made by the president of the board of health commissioners. The success of his administration was stressed as well as the efficiency he had brought to the department.

Dr. O. E. PATTERSON, who has practiced for some time at Joseph, has located for future practice at Vale.

Dr. L. M. SPALDING, formerly of Pendleton, has located for practice at Astoria.

Dr. W. H. BURNARD, who has hitherto practiced in Utah, has located for practice at Dayton.

Dr. F. E. BOYDEN, well known practitioner of Pendleton, has located for practice at Portland.

**MEDICAL WEDDING.** Dr. A. E. Mackey, of Portland, was married to Miss Doris Bagley, of that city, October 5, the wedding taking place in San Francisco.

**NEW PHYSICIANS BY RECIPROCITY.** The department of licenses at Olympia has admitted to practice thirty-one applicants by reciprocity on licenses obtained in other states. The following have already located in this state: A. J. Bowles, W. R. Miller, S. Sawamura, W. G. Hiltner and P. Whelan, Seattle; M. C. Barber, H. N. Gragg, J. W. Gullikson, Tacoma; C. V. Farrell, Edgcomb; C. H. Hurst, Oakesdale; S. A. Keim, Wenatchee; C. M. McKenzie, Pasco; H. B. Matheny, Aberdeen; B. L. Phillips, Skykomish; J. F. Riordan, Bremerton.

**HOSPITAL TO BE ENLARGED.** An addition is being constructed to Swedish Hospital, Seattle, of reinforced concrete, seven stories in height. Its dimensions are 42 by 100 feet. This will accommodate one hundred patients, making the hospital capacity two hundred and ten patients. A new surgery will be constructed. Each room will contain hot and cold water and telephone. The cost will be \$200,000. Another unit of the same size will be constructed at a later date. A new heating plant with complete laundry is being constructed at a cost of \$10,000.

**HOSPITAL ADDITION NEARLY COMPLETED.** The addition to Tacoma General Hospital is approaching completion. The new wing of reinforced concrete is 42 by 103 feet, five stories in height. One floor provides additional quarters for nurses, two floors for patients and the upper floor a maternity department. Another building is under construction to house heating plant and a dormitory 33 by 99 feet for male help. The addition will cost \$125,000.

**ADDITION TO HOSPITAL.** The hospital at Clear Lake is being enlarged by an addition which will provide new rooms in the upper story, with culinary additions on the first floor. It will be ready for us in a few weeks.

**NURSES HOME TO BE BUILT.** A contract has been awarded for the construction of the nurses home in connection with the hospital under construction at Longview. It will be across the street from the latter. It is to be a frame structure, 30 by 40 feet, two stories in height, with accommodations for twenty nurses.

**HOSPITAL IMPROVEMENTS.** The U. S. Marine hospital, at Port Townsend, is to be improved by the expenditure of about \$7,000. There will be installation of new plumbing system, diet kitchen and miscellaneous repairs on buildings and lawn improvements.

**DETENTION HOSPITAL DISCONTINUED.** The Seattle detention hospital for the treatment of women affected with venereal diseases has been abandoned on the recommendation of health commissioner, Dr. E. T. Hanley. A clinic will be maintained for the treatment of these diseases and the observation of infected patients. This action was in the interest of economy and reduction of taxes.

**TUBERCULOSIS SANATORIUM DISAPPROVED.** There has been considerable agitation relative to the establishment of a tuberculosis sanatorium in Yakima county.

The county commissioners have refused to appropriate \$25,000 for that purpose. They included in their budget, however, the sum of \$2,000 for the care of tuberculous patients at Edgecliff Sanatorium at Spokane.

**BEQUEST TO HOSPITAL.** St. Luke's hospital, at Bellingham, has received a bequest of \$10,000 through the will of a pioneer, who died last month.

**IN CHARGE OF HOSPITAL.** Dr. R. H. Beach has been placed in charge of the Northern Pacific hospital at Tacoma, to succeed Dr. R. A. Remington. The latter has gone for an indefinite stay in Europe, where he will do special research work. Dr. Beach, who has lived in Tacoma for the past seven years, was formerly in charge of the Northern Pacific hospital at Missoula, Mont.

**APPOINTED TO STATE OFFICE.** Dr. Paul A. Turner, of Seattle, has been appointed director of the tuberculosis division of the public health department of Kentucky, with headquarters at Louisville. For the past fifteen years he has been connected with public health work in Washington, being state commissioner of health for four years previous to last summer. He resigned from the Seattle health department to accept the new appointment.

**REAPPOINTED HEALTH OFFICER.** At a recent meeting of county commissioners, Dr. L. G. Spaulding, of Richland, was reappointed county health officer for a term of two years.

**RESIGNS OFFICE.** Dr. F. W. McKnight, of Cle Elum, has resigned from the position of city health officer. There has been some controversy with the city council regarding the purifying the water supply.

**WILL STUDY GARBAGE HANDLING.** Dr. E. T. Hanley, Seattle health commissioner, has been authorized by the city council to make a tour of the country to make a study of the systems of handling garbage. He will visit a number of the largest cities to obtain information on this subject.

**DR. J. P. KANE,** health officer of Walla Walla, has received a fellowship from the Rockefeller Foundation and will pursue special studies in health and sanitation at Johns Hopkins University.

**DR. ALEXIS WARREN,** who for the past twenty years has practiced in Sioux City, Iowa, as specialist in eye, ear, nose and throat work, has located for practice at Bellingham.

**DR. R. B. TRACY,** well-known specialist in neuropsychiatry, of Butte, Mont., has located for practice in Seattle.

**DR. JOHN L. MONTGOMERY,** who has practiced for the past ten years in Minneapolis, has located for practice in Seattle.

**DR. JAMES FRANCKUM,** recently from Alberta, Canada, has located for practice at Enumclaw.

**DR. J. M. HENDERSON,** of Seabold, who has recently retired from service in the U. S. Veterans' Bureau, has located for practice in Seattle.

**DR. O. N. HEUSTED,** who has recently practiced in Seattle, has located at Toledo.

## IDAHO

**HOSPITAL FUND PROGRESSING.** The fund to build the Nazarene Hospital, at Nampa, is reported to be progressing favorably. Funds are being collected in that city and adjacent towns for the purpose of erecting a \$60,000 general hospital.

**DR. J. F. RUTLEDGE,** of Cascade, has moved to Peoria, Ill., where he will go into practice.

## MONTANA

**DR. D. S. MACKENZIE,** who practiced for twenty-five years at Havre, and has been located for the past two years in California, has relocated for practice at Havre.

## OBITUARIES

**DR. O. M. DODSON,** of Baker, Ore., died October 1, following a cerebral hemorrhage, aged 83 years. He was born in Tennessee in 1842. He served for four years in the Civil War, being discharged with the rank of major. He located in California in 1869, engaging in farming until 1874, when he entered the medical department of Willamette University, Salem, Ore., graduating in 1877. He was appointed physician to the Malheur Indian reservation. He later practiced at Prairie City and located in Baker in 1883, residing there until the time of his death. He was held in high esteem by the whole community, being well-known to all residents.

**DR. DEAN GILKEY,** of Eugene, Ore., died September 28 after a year's illness, aged 37 years. He was a graduate of the University of Oregon and of the medical department of the University of Pennsylvania. He practiced in Washington for a time and during the war was an officer in the reserve corps.

**DR. J. WARREN RICHARDSON,** of Seattle, Wash., died October 7 of disease of the heart, aged 47 years. He was born in Barre, Mass. After graduation from Dartmouth College he studied in the medical department of the University of Vermont, graduating in 1903. He settled in Seattle in 1904.

## NEW ADVERTISEMENTS

Attention is called to the following new advertisements appearing in this issue. G. & C. Merriam Co. present Webster's New International Dictionary (page 8). The Nonspi Company offers an announcement (page 14).

**ROENTGEN RAY IN TREATMENT OF LOCAL INFLAMMATIONS, CELLULITIS AND CARBUNCLES.** Fred M. Hodges, Richmond, Va. (Journal A. M. A., Oct. 24, 1925), asserts that in the majority of cases of carbuncles the roentgen ray acts almost as a specific, even in very extensive lesions, when the inflammation is limited largely to the skin and subcutaneous tissues. Pain is usually relieved, drainage enhanced, and a more rapid recovery follows. The deep seated types, especially those occurring on the back of the neck, when treated after the carbuncle was well developed, responded almost as well to irradiation. In two early cases of this type on the back of the neck, no benefit appeared to follow irradiation, and probably a delay in breaking down and healing occurred.

## MEDICAL RESERVE CORPS

The following are the Medical Reserve Officers already appointed to command reserve medical units in the states of Washington, Oregon, Idaho and Montana. There are some other medical units for which no selection of commanding officers has as yet been made:

Colonel James B. Eagleson, Med-Res., 902 Boren Ave., Seattle, Wash., commanding General Hospital No. 50.

Colonel Herbert M. Greene, Med-Res., 1206 Stevens Bldg., Portland, Ore., commanding Evacuation Hospital No. 87.

Colonel David C. Hall, Med-Res., 4531 18th Ave., N. E. Seattle, Wash., commanding 349th Medical Regiment.

Colonel Marius B. Marcellus, Med-Res., 809 Stevens Bldg., Portland, Ore., commanding General Hospital No. 139.

Lieut-Colonel Ferdinand H. Dammasch, Med-Res., 292 E. 22nd St., Portland, Ore., commanding Evacuation Hospital No. 82.

Lieut-Colonel Frank P. Gardner, Med-Res., 504 Boren Ave., Seattle, Wash., commanding Station Hospital No. 147.

Lieut-Colonel Fred A. Pittenger, Med-Res., 148 E. Jefferson St., Boise, Idaho, commanding Surgical Hospital No. 68.

Lieut-Colonel Thomas C. Witherspoon, Med-Res., 15 S. Excelsior Ave., Butte, Mont., commanding Surgical Hospital No. 66.

Major Richard B. Dillehunt, Med-Res., Pittock Block, Portland, Ore., commanding General Hospital No. 46.

Major Houston H. Parsons, Med-Res., P. O. Box 196, Sidney, Mont., commanding Hospital Train No. 72.

Major Benjamin N. Wade, Med-Res., 92 Peacock Lane, Portland, Ore., commanding Evacuation Hospital No. 84.

Lieutenant Colonel Thomas M. Joyce, Med-Res., Stevens Bldg., Portland, Oregon, as Chief of Surgical Service, General Hospital No. 46.

Major Laurence Selling, Med-Res., 510 21st St., Portland, Oregon, as Assistant to Chief of Medical Service, General Hospital No. 140.

Major Frank E. Butler, Med-Res., 541 E. 11th St., N. Portland, Oregon, as Roentgenologist.

First Lieutenant Ivan M. Wooley, Med-Res., 371½ Russell St., Portland, Oregon, as Medical Ward Officer.

First Lieutenant Edgar J. Barker, Ma-Res., Murray Apts., 58 W. Quartz St., W. Butte, Montana, as Adjutant, Detachment Commander and Evacuation Officer, 67th Surgical Hospital, 3d Army.

Major Richard T. Burke, Med-Res., Snoqualmie Falls, Washington, as Assistant to Chief of Surgical Service, General Hospital No. 50.

The Surgeon, Ninth Corps Area, states that mobilization plans in blank have been completed by him and are in readiness to send out to the commanding officers of Medical Reserve Corps units as they accomplish a satisfactory organization for administrative purposes. The commanding officer merely has to enter certain data in spaces left blank for the purpose, and the document becomes a complete guide to prompt mobilization.

For consideration in connection with the mobilization plan thus completed, the Surgeon, Ninth Corps Area, has also prepared, and will send out to commanding officers, a reminder list, showing each administrative step which should be taken, in its proper sequence, during the period of mobilization. If such guides had been available during medical mobilization during the late war, a vast amount of inefficiency and delay would have been averted. Their availability now is merely an expression of one way by which the National Defense Act is operating in the prevention of similar difficulties in any future emergency.

Headquarters, Ninth Corps Area, has just issued orders, assigning 222 medical reserve officers to medical units and appropriate duties therein. This seems like a large number of doctors, but it is only one-sixth of the medical personnel that these same units require, and only one-tenth of the medical personnel required from the Ninth Corps Area under the National Defense Act. With these assignments some of these units are taking on the appearance of organization.

To facilitate the development of the Medical Reserve Corps at large, and to give general aid in respect to the organization of its hospitals and other medical units, certain reserve medical officers have been designated to act as local representatives of the Surgeon, Ninth Corps Area, within their respective geographical limits. These officers are supported by committees of which they are chairmen. One other reserve medical officer and the regular army Surgeon at the adjacent military post compose the remainder of each such committee.

These committees are:

### *For Northwest Washington:*

Colonel Harry V. Wurdemann, Med-Res., 709 Cobb Bldg., Seattle, Wash., Chairman.

Colonel James B. Eagleson, Med-Res., 902 Boren Ave., Seattle, Wash.

Major Harvard C. Moore, M. C., Fort Lawton, Wash.

### *For Southwest Washington and Western Oregon:*

Colonel Herbert M. Greene, Med-Res., 1206 Stevens Bldg., Portland, Ore., Chairman.

Major Benjamin N. Wade, Med-Res., 92 Peacock Lane, Portland, Ore.

Lieut-Colonel W. L. Little, M. C., Vancouver Barracks, Wash.

### *For Eastern Washington, Oregon and Idaho:*

Colonel Samuel E. Lambert, Med-Res., 726 Summit Ave., Spokane, Wash., Chairman.

Major L. E. Inman, M. C., Fort George Wright, Wash. (Third member to be appointed.)

The above named officers are prepared to assist the Medical Reserve Corps movement in every possible way. Members of the profession desiring commissions in the Medical Reserve Corps would do well to consult them. Their advice and aid are available to officers already commissioned, in building up hospitals and other units into complete, well-rounded organizations and in helping in every other way practicable.

## REPORTS OF SOCIETY MEETINGS

### IDAHO STATE MEDICAL ASSOCIATION

MINUTES OF THE HOUSE OF DELEGATES OF THE THIRTY-THIRD MEETING OF IDAHO STATE MEDICAL ASSOCIATION, ANTLERS HALL, POCA TELLO, IDAHO, SEPTEMBER 3-5, 1925.

#### FIRST SESSION

September 2, 8:00 p. m.

Meeting called to order by the chairman, Dr. C. W. Pond.

Roll Call: Members present: J. N. Davis, T. F. Mullen, C. W. Pond, A. F. O. Neilson, J. N. Alley, F. A. Irwin.

The chairman appointed the following Committee on Resolutions: Davis, Mullen and Alley. In the absence of a quorum no business was transacted and the meeting adjourned to meet at the call of the President.

#### SECOND SESSION

September 3, 4:30 p. m.

Meeting called to order by the president.

Roll Call: Members present: J. N. Alley, Nez Perce; J. R. Young, A. M. Newton, E. N. Roberts, Pocatello; A. F. O. Neilson, A. F. McClusky, C. D. Weaver, C. F. Zeller, C. W. Pond, President, South Side; Alfred Budge, John Boeck, Southwest Idaho; J. T. Wood, Kootenai; J. N. Davis, Secretary.

The following resolutions were presented:

*Be it Resolved:* That, inasmuch as the Federal Government is no longer in need of the revenue derived by taxing the medical profession under the Harrison Narcotic Act, we respectfully request its reduction to the minimum and original fee of \$1.00.

*Be it Further Resolved:* That the Federal Government is taxing the medical profession for exercising the state given right to practice medicine and surgery, in that it taxes the physician on traveling expenses incurred by him in attending medical meetings and postgraduate study, inasmuch as denial of the deductibility of such expenses in the computation of income tax is equivalent to this imposition on him, and that we respectfully request that the medical profession be relieved of this burden and these expenses be made deductible in the computation of income tax.

*Be it Resolved:* That the Idaho State Medical Association go on record as favoring the division of the state into Public Health districts under competent health officers, and that these officers be paid a competent salary, the minimum to be not less than \$2,500 a year.

Dr. John T. Wood of Coeur d'Alene brought up the question of fees paid for the examination of insanity cases. He also stated that the State Insurance Fund, upon the refusal of the doctors of Coeur d'Alene to work for the prevalent fees, had notified their policy holders to take their injured to Spokane for treatment.

Moved by Dr. N. R. Wallentine of Sandpoint, seconded by Dr. J. R. Young of Pocatello, that a committee be appointed by the president, including Mr. Paul Davis, to meet with the Industrial Accident Board to consider ways and means of correcting this misunderstanding.

Meeting adjourned to meet at the call of the president.

#### THIRD SESSION

September 4, 1:30 p. m.

Meeting called to order by the chairman.

Rollcall: Members present: J. T. Wood, Kootenai; N. R. Wallentine, Bonner County; C. D. Weaver, C. F. Zeller, A. F. McClusky, South Side; H. A. Anderson, Upper Snake River; H. L. Willson, Idaho Falls; J. R. Young, Pocatello; Alfred Budge, John Boeck, Southwestern Idaho; C. W. Pond President; J. N. Alley, Nez Perce; A. F. O. Neilson, South Side; G. R. Proctor, G. O. Kellogg, Canyon Co.; J. N. Davis, Secretary.

First order of business was the election of officers for the coming year. Dr. N. R. Wallentine of Sandpoint was nominated for president by Dr. J. N. Alley. Motion that nominations be closed and the secretary instructed to cast the unanimous ballot for Dr. Wallentine, carried. Upon the receipt of the written withdrawal from the House of Delegates, the secretary cast the unanimous ballot for Dr. N. R. Wallentine for President for 1926.

Dr. D. L. Alexander of Twin Falls was nominated for Vice-President by Dr. A. F. McClusky of Buhl. Unanimous election.

Dr. J. N. Davis of Kimberly was nominated for Secretary by Dr. A. F. McClusky of Buhl. Unanimous election.

Dr. G. O. Kellogg of Nampa was nominated for Councillor from the West District by Dr. N. R. Wallentine of Sandpoint. Unanimous election.

Dr. G. R. Proctor of Nampa was nominated as Delegate to the House of Delegates of the A. M. A., by Dr. G. O. Kellogg of Nampa. Unanimous election.

Dr. A. F. McClusky of Buhl was nominated as alternate to the A. M. A. by Dr. D. L. Alexander of Twin Falls. Unanimous election.

The following Trustees of Northwest Medicine were elected: J. T. Wood, Coeur d'Alene; J. L. Stewart, Boise; C. M. Cline, Idaho Falls.

The following Associate Editors for Northwest Medicine were elected: Chas. Wetherbee, Twin Falls; N. R. Wallentine, Sandpoint.

Committee on Scientific Work: R. M. Bowell, Bonners Ferry; C. R. Scott, Twin Falls.

Ex-officio members: N. R. Wallentine, Sandpoint (President); J. N. Davis, Kimberly (Secretary).

Committee on Public Health and Legislation: H. P. Ross, Nampa; C. S. Moody, Rigby; F. W. Almond, Boise.

#### STANDARDIZATION

Consideration of the Twin Falls County General Hospital and the suit instituted in the District Court and carried to the Supreme Court by the physicians of Twin Falls County in the name of the County Commissioners of said County, to determine the legality of such standardization, was brought up by Dr. A. F. McClusky of Buhl. For detailed study of this question the chair appointed the following committee: W. F. Howard of Pocatello, J. T. Wood of Coeur d'Alene, A. F. McClusky of Buhl.

## REPORT OF SECRETARY

For the period, June 20, 1924 to Sept. 1, 1925.

## Financial Statement:

Cash on hand June 20, 1924.....	\$542.29	
1924 dues collected later.....	34.00	
Voluntary contributions by doctors..	200.00	
1925 dues collected.....	804.00	
		\$1580.29
Disbursement:		
Dr. W. A. Price Lectures.....	\$400.00	
Hotel Owyhee Visitors' Bill.....	58.05	
Northwest Medicine, first half 1924...	122.00	
Northwest Medicine, 2nd half 1924..	132.00	
New Equipment, lantern, etc.....	103.50	
A. M. A. Directory.....	12.00	
Refunds to Component Societies.....	104.00	
Stamps, Printing, Stationery, Pro- grams 1925, Bond renewal, Steno- grapher, telephone and telegraph....	291.28	
Cash on hand.....	357.46	
		\$1580.29

Total number of physicians in the state.....	356
Present membership of the Association.....	231

There are at present 11 functioning component societies as follows:

Bear Lake County.....	Members	5
Bonner County.....	Members	10
Canyon County.....	Members	18
Idaho Falls.....	Members	12
Kootenai County.....	Members	10
Pocatello.....	Members	34
Shoshone County.....	Members	7
Southwestern Idaho.....	Members	44
South Side.....	Members	45
Nez Perce County.....	Members	32
Upper Snake River.....	Members	10
Non Resident.....	Members	4

## Recommendations:

No. 1. That we request the Department of Public Welfare of the State of Idaho to make a goiter survey of the state and that we render all possible aid to this undertaking, both as individuals and as a society.

No. 2. That the Constitution of the Idaho State Medical Association be so amended that the Vice-President be called the President-Elect, and assume the duties of that office.

## FOURTH SESSION

September 5, 1:30 p. m.

Meeting called to order by the chairman.

Roll call: Members present: J. N. Alley, Nez Perce; E. N. Roberts, Pocatello; C. D. Weaver, South Side; H. H. King, Bear Lake County; G. O. Kellogg, G. A. Proctor, Canyon County; T. F. Mullen, Pocatello; A. F. O. Neilson, South Side; Alfred Budge, Southwest Idaho; C. S. Moody, Upper Snake River; C. W. Pond, President; J. N. Davis, Secretary.

The following resolutions were passed:

*Be it Resolved*; That the Department of Public Welfare of the State of Idaho be asked to make a goiter survey of the state or to procure this survey and that we render all possible aid thereto. Moved by Davis, seconded by Alley.

*Whereas*: The various county and district medical associations of Idaho, during the 1925 legislative session, showed their interest in the tuberculosis hospital legislation by responding promptly to the appeal of the Tuberculosis Hospital Committee of the South-

western Idaho Medical Association, urging passage of the bill; and

*Whereas*: The veto of the measure passed by the 1925 legislature makes further effort necessary, if we are to secure a sanatorium, and since compliance with the state law which requires that living cases of tuberculosis shall be reported to the State Department of Public Welfare would further this legislation more effectively than any other method; be it

*Resolved*: That the State Medical Association does hereby pledge the aid of its members in securing the reporting of all known cases of tuberculosis to the State Department of Public Welfare; and be it further

*Resolved*: That a committee from the State Medical Association be appointed to work with committees from other statewide organizations for a state sanatorium. Moved by Moody, seconded by Mullen.

## REPORT OF HOSPITAL COMMITTEE

Recommends that a special assessment, not to exceed \$5.00, be levied if found necessary to aid in the Twin Falls County Hospital Suit. Reported accepted and special assessment levied. Moved by Moody, seconded by Mullen.

Meeting adjourned.

J. N. DAVIS, Sec'y-Treas.

PROCEEDINGS OF THE THIRTY-THIRD ANNUAL  
SESSION OF THE IDAHO STATE MEDICAL  
ASSOCIATION, SEPTEMBER 3-5, 1925

September 3, 9:00 a. m.

Meeting called to order by Dr. C. W. Pond, President of the Association.

C. Ben Ross, Mayor of Pocatello, delivered an address of welcome which was responded to by the president.

The greater part of the work of the annual meeting being its scientific session and the program being full to overflowing, the first paper was called for and read by Dr. Walter C. Alvarez on the "Taking of a Gastrointestinal History and What It Means When You Get It."

Following the program Dr. Joseph C. Beck of the University of Illinois delivered the second address on "Plastic Surgery About the Head and Neck."

2:00 p. m.

"Celiac Disease," Dr. Julius H. Hess, Chicago, of the University of Illinois.

"The Cerebrospinal Fluid, Normal and Pathological," Dr. A. L. Skoog, University of Kansas.

Meeting adjourned to allow time for house of delegates meeting.

September 4, 9:00 a. m.

"Posterior Displacements of the Uterus," Dr. Frank A. Lynch, University of California.

"Diagnosis and Treatment of Infections of the Urinary Tract," Dr. Wm. F. Braasch, Mayo Clinic.

"Experiences in Local Anesthesia in Goiter Surgery," Dr. Charles C. Tiffin, Seattle, Wash.

2:00 p. m.

"Goiter," Dr. Wallace I. Terry, University of California.

"Treatment of Cancer of the Cervix," Dr. Frank W. Lynch, University of California.

"Peptic Ulcer, Clinical Aspects," Dr. Geo. B. Eusterman, Mayo Clinic.

"Roentgenologic Diagnosis of Peptic Ulcer," Dr. Russell D. Carmen, Mayo Clinic.

6:30 p. m.

Banquet, Hotel Bannock.

Scientific Program:

Address, Dr. C. W. Pond, Pocatello, President Idaho Medical Association.

"General Discussion of the Tuberculosis Question," Dr. Walter Griswold, Seattle.

"Some Aspects of High Blood Pressure," Dr. W. C. Alvarez, University of California.

"Acidosis in Infancy and Childhood," Dr. Julius H. Hess, Chicago.

September 5, 9:00 a. m.

"The Early Diagnosis of Nerosurgical Conditions of the Head," Dr. Ernest Sachs, Washington University, St. Louis, Mo.

"Examination and Management of Recent Injuries of the Eye," Dr. Edward Jackson, University of Colorado.

"Some Complications of Ear, Nose and Throat from Disease and Operation and Their Management," Dr. Joseph C. Beck, University of Illinois.

1:30 p. m.

Consideration of constitutional amendments and other business.

2:00 p. m.

"Errors in the Diagnosis of Renal Disease," Dr. Wm. F. Braasch, Mayo Clinic.

"Postoperative Pulmonary Complications," Dr. Wallace Terry, University of California.

"The Stomach After Operation; Practical Considerations," Dr. Geo. B. Eusterman of the Mayo Clinic.

"Duodenal Ulcer," Dr. Russell B. Carman of the Mayo Clinic.

Business session: 1:30 p. m.

Reading of the minutes of the 1924 annual session. They were approved without correction.

Amendment No. 1 to the constitution read and discussed. Moved by Dr. Moody, seconded by Dr. Weaver, that the amendment be tabled. Motion carried.

Amendment No. 2 to the constitution read and discussed. Moved by Dr. McClusky, seconded by Dr. Moody, that the amendment be accepted. Motion carried unanimously. This amendment increases the annual dues to \$6.00 to take care of the increase in the subscription rate to the official publication Northwest Medicine, which is raised from one (\$1.00) dollar to two (\$2.00) dollars per year.

Proposed amendment: First reading.

Amendment No. 3:

Article LX Sec. 1. Entitled, Officers, be amended to read: The Officers of this Association shall be a President, a President-Elect, a Secretary-Treasurer and three Councillors. Therein substituting the word "President-Elect" for "Vice-President."

Announcement of the election of officers for the coming year by the secretary of the House of Delegates.

Meeting adjourned sine die.

J. N. DAVIS, Secretary-Treasurer.

**WASHINGTON STATE MEDICAL ASSOCIATION**  
MINUTES OF THE THIRTY-SIXTH ANNUAL MEETING OF WASHINGTON STATE MEDICAL ASSOCIATION, HELD AT OLYMPIC HOTEL, WASH., SEPT. 17-19, 1925.

The thirty-sixth annual meeting of Washington State Medical Association was convened at Olympic Hotel, Seattle, Wash., September 17, 1925.

**HOUSE OF DELEGATES**

**FIRST SESSION**

The first meeting of the House of Delegates was called to order by the President at 9 a. m. On calling the roll a quorum was found present, the following delegates answering to their names: D. A. Nicholson, F. H. Brush, C. H. Thomson, J. H. O'Shea, A. O. Loe, C. R. McCreery, J. P. Munly, Elmer Hill, S. S. Oppenheimer, C. B. Ward, M. Langworthy, F. Epplen, D. E. McGillivray, A. E. Gerhardt, O. R. Austin, C. A. Smith, F. T. Maxson, D. H. Houston, A. C. Crookall, L. F. Wagner, A. E. Anderson, H. G. Willard, W. B. Penney, E. W. Janes, J. R. Brown, A. B. Cook, A. P. Duryee, P. D. McCornack, G. A. Downs, A. E. Stuhlt, J. C. Lyman, C. E. McClure.

It was moved that the minutes of the last annual session be adopted as published. Seconded and carried.

The Secretary stated that it was customary to have the books examined by a certified public accountant on January 1 and July 1 of each year, and that there had been two audits since the last annual meeting, an extract from each being published in the program.

**FINANCIAL REPORT FOR 1924**

January 10, 1925.

To the Officers and Members,  
The Washington State Medical Association,  
Seattle, Washington.  
Gentlemen:

In accordance with your request, we have audited the books and records of your Association for the calendar year ending December 31, 1924, and as a result thereof, we have prepared and attach hereto the following exhibits:

Medical association fund.....	Exhibit "A"	Page 4
Legal defense fund.....	Exhibit "B"	Page 5
Disbursements M. A. F.....	Exhibit "C"	Page 6
Disbursements L. D. F.....	Exhibit "D"	Page 7
Disbursements general.....	Exhibit "E"	Page 8-9
Interest received .....	Exhibit "F"	Page 10
Recapitulation .....	Exhibit "G"	Page 11

While we believe you will find these exhibits self-explanatory to a large degree, we might touch briefly upon each and shall do this in the order in which they appear above.

**MEDICAL ASSOCIATION FUND**

Receipts from membership dues, as shown by Exhibit "A", amounting to \$3908.00, were verified with the original remittance reports from the various County Society Secy-Treas. and found to be in agreement. Of the 977 paid memberships 2 were refunded on account of being paid twice; 1 was for 1921 dues; 6 for 1922; 43 for 1923, and 925 for 1924, making a total paid membership at December 31, 1924, of 925

members. You will note from Exhibit "A" a credit balance to this fund of \$7840.13, an increase of \$953.26.

#### LEGAL DEFENSE FUND

Receipts from subscriptions to the Legal Defense Fund, as shown by Exhibit "B", amounting to \$3960, were verified by comparison with the number of certificates issued and those entered on the cash book, and found to be in agreement therewith. You will note from Exhibit "B" a credit balance to this fund of \$5949.96, an increase of \$1452.12 for the period.

#### DISBURSEMENTS

All disbursements, as shown by Exhibits "C," "D" and "E," have been made by voucher check, and duly oked invoices are on file or payment authorized by the By-Laws of the Association. The checks were all examined and found to be properly endorsed and entered in the check register. The General Disbursements, as shown by Exhibit "E," are for the six months ending June 30, 1924, and shown in report of funds. The general expense items for the last six months are charged to the Medical Association Fund in Exhibit "C," as authorized by the House of Delegates at their annual meeting in August.

#### INTEREST RECEIVED

Interest received from liberty bonds, amounting to \$46.25, has been divided between the two funds.

#### RECAPITULATION

There has been a total of receipts from all sources of \$8,314.25 for the period, and disbursements of \$5,908.77, leaving an excess of receipts over disbursements of \$2405.48. This amount, added to your January 1st balance of \$11,384.61, gives you a total in the hands of your Treasurer of \$13,790.09 at December 31, 1924, which is made up as follows:

Seattle National Bank (Open account).....	\$ 3,494.29
Liberty Bonds (At cost).....	10,295.80
	<u>\$13,790.09</u>

as shown by Exhibit "G."

#### CASH ON HAND

This balance of \$3,494.29 was verified by statement from the depository and found to be correct.

#### LIBERTY BONDS

These bonds were presented for examination and found to be intact, all due coupons having been clipped and deposited to the credit of your account. All coupons not due are attached to the bonds and kept in safe deposit box 9006 at Seattle National Bank.

#### CONCLUSION

We hereby certify that the preceding remarks and the attached exhibits are in agreement with the books and in our opinion correct and show the true condition of the two funds, as at December 31, 1924, and operations of the association for the twelve months ending that date.

Respectfully submitted,

LOUIS E. SMITH & Co.

Certified Public Accountants.

(Signed) By LOUIS E. SMITH.

Detailed report filed.

## FINANCIAL REPORT

For Six Months Ending June 30, 1925

July 10, 1925.

To the Officers and Members,  
The Washington State Medical Association,  
Seattle, Washington.  
Gentlemen:

We have completed our audit of the books and records of your Association for the period, January 1 to June 30, 1925, and now present our report. As part of this report we submit the following exhibits:

Medical association fund.....	Exhibit "A" Page 4
Legal defense fund.....	Exhibit "B" Page 5
Disbursements M. A. F.....	Exhibit "C" Page 6
Disbursements L. D. F.....	Exhibit "D" Page 7
General receipts .....	Exhibit "E" Page 8
Recapitulation .....	Exhibit "F" Page 9

While we believe these exhibits are to a large degree self-explanatory, we wish to touch briefly upon each and shall do this in the order in which they appear above.

#### MEDICAL ASSOCIATION FUND

Receipts from membership dues, as shown by Exhibit "A," amounting to \$3,579.00, were verified by comparison with the number of certificates issued and those entered on the cash book, and found to be in agreement. You will note a credit balance to this fund of \$6,737.58, an increase of \$787.62.

#### DISBURSEMENTS

The disbursements, as shown by Exhibits "C" and "D," have been made by voucher check and duly oked invoices are on file or payments authorized by the By-Laws of the Association. These checks were all examined and found to be properly endorsed and entered in the check register.

#### INTEREST RECEIVED

Interest received from liberty bonds, \$223.13, and savings account, \$50.00, as shown by Exhibit "E," has been divided equally between the two funds.

#### RECAPITULATION

There has been a total of receipts from all sources of \$5552.13 for the period, and disbursements of \$3,683.74, leaving an increase of receipts over disbursements of \$1868.39. This amount, added to your January 1 balance of \$13,790.09, gives you a total in the hands of your Treasurer of \$15,658.48 at June 30, 1925. This balance is made up as follows:

Balance, open acct. Seattle National Bank....	\$ 2,312.63
Washington Mutual Savings Bank.....	3,050.00
Liberty bonds, at cost.....	10,295.80
	<u>\$15,658.48</u>

as shown by Exhibit "F."

The balance at the Seattle National Bank was compared with a statement from the depository and found to be correct. The savings account at the Washington Mutual Savings Bank was verified by the depository and the interest due entered in the pass book. The liberty bonds were presented for examination and found to be intact, all due coupons being clipped and deposited to your account. All coupons not due were attached to the bonds.

CONCLUSION

We hereby certify that the attached exhibits are in agreement with our books, and subject to the preceding comments, in our opinion, show the true condition of the two funds at June 30, 1925, and the results of operations for the six months ending that date.

Respectfully submitted,

LOUIS E. SMITH & Co.

Certified Public Accountants.

(Signed) By LOUIS E. SMITH.

Detailed report filed.

It was moved that a Committee be appointed to examine the Secretary-Treasurer's report. Dr. H. D. Dudley was appointed Chairman.

The report of each Committee was accepted as published in the program.

CHILD WELFARE

Dr. P. D. McCornack, Chairman

1. Have tried to put on a pediatric program in every county society at least once during the year.

2. Have formulated a pediatric program of four short lectures to be sent on request to the remote county societies.

Subjects: Infant Feeding, Rickets, Aims and Purposes of the Infant, Welfare Committee, Scarlet Fever and Diphtheria.

3. Have appointed a doctor in every county in the state to manage the infant welfare work in his county. In many counties much has been accomplished.

4. Have endeavored to get the physicians of the state to use among their patients the correspondence study course in "Hygiene of Maternity and Infancy." This is distributed by the State Health Department in conjunction with the University Extension Division of the University of Washington. This is very valuable and is not used as much as it should be.

5. Have kept in touch with and worked along with the Child Hygiene Division of the State Department of Health. Almost all of the activities mentioned below are the activities of that department.

6. Have helped the state department in distribution of literature on infant welfare subjects.

7. Have watched carefully the work of the American Child Health Association, and the Child Health Division of the Department of Labor.

8. Many members of this Association, the Washington State Dentist Association, the North Pacific Pediatric Society and the Washington Public Health Nurses' Association, have assisted in many "Health Schools," held throughout the state by the Child Hygiene Division.

9. Infant welfare conferences, or clinics, always at the request of the local physicians, were held throughout the state. The following summarizes health conference activities January 1 to June 30, 1925:

Number of health conferences held under auspices of the Child Hygiene Division of the State Department of Health..... 24

Number of health conferences held under local auspices .....	14
Total .....	38
Number of children examined.....	2397

Detailed report available on 1523. Of these 48.8 per cent showed defects needing correction. Practically all of these were referred to local physicians. We find in these clinics that very few children have been vaccinated against smallpox and almost none immunized against diphtheria.

CONSERVATION OF VISION

Dr. W. F. Hoffman, Chairman

With the means at its disposal, the efforts of this committee must be largely along the line of talks to lay audiences at health conferences, etc., although a new and widespread field has opened in the event of the radio. Members of this committee have given talks, some of them illustrated by moving picture films, to parent-teacher association meetings, Kiwanis and Rotary clubs, child health clinics, conferences, etc. There have been several talks given over the radio and more opportunities along this line would be taken care of, if the work of the broadcasting stations could be brought into closer relation with the Public Health League.

The work of the National Committee for Prevention of Blindness has brought about a tremendous improvement in the matter of preventing accidents, and the public health leagues throughout the country are educating the public to the value of eye examinations. More can be done along this line, especially in emphasizing the need for early examination of school children's eyes. This work has not advanced as rapidly as it might, due to the natural inertia of such matters, and a certain almost universal prejudice against glasses.

Practically all the states have regulations for the prevention of ophthalmia neonatorum and these statutes will be improved and changed from time to time without further impetus being given them. There is no need for new legislation along the strict lines of conservation of vision. The campaigns of public education carried on by the medical profession are rapidly making further laws superfluous, and are causing many of the fads and fancies to die out.

The committee begs leave, however, to attract your attention and solicit your support of a measure, to be introduced in the November session of the legislature, to enable state and counties to appropriate funds for the care and education of the adult blind. It is a well-constructed measure, having been patterned after similar measures in use in the East and will help to close a gap in our scheme for the care of the blind.

The committee hopes that more of the larger cities in the state will see the necessity of establishing sight saving departments in the public school systems. The sight saving rooms in Seattle and Tacoma have certainly proved their worth and will continue to grow in usefulness as the medical men come to realize their value.

Our suggestions for the future are: A library of movie films in care of the Public Health League. A supervision of the radio health talks by the Public Health League, or the State Association. More audiences. More good speakers.

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#### GOITER

Dr. E. S. West, Chairman

Each county in the state received a form letter, telling the method of goiter prevention proper to use in the schools. In many of these counties goiter prevention is being practiced. We hope to obtain a full report at the time of the next meeting.

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#### HOSPITAL STANDARDIZATION AND SURVEY

Dr. H. E. Coe, Chairman

Many requests for information relative to the work done in various hospitals throughout the state have been received from the American College of Surgeons, and from the Council on Medical Education and Hospitals, of the A. M. A. These have been referred to the appropriate committeemen for investigation and report. The close relation between this committee and the above organizations has been maintained and this committee is recognized by them as the reliable source of information for this state.

On account of the size of the territory to be covered several members have been added to the committee and the districts modified accordingly, so that at present there are twelve. This condition also has made committee meetings impractical and the work has been carried on by correspondence. With a committee of this size the demands upon any one man have not been excessive and the results have been quite satisfactory.

A questionnaire has been sent out covering all hospitals of fifty or more beds to obtain information upon certain points of standardization for the American College of Surgeons and certain items regarding internes for the Council on Medical Education and Hospitals. These have nearly all been completed and it is intended that the information obtained be summarized and sent to the various committee members, as well as to the College and Council in order to give each man a broader view of the work in the state.

The reports received to date indicate that the essential features of standardization are being logically and consistently developed, although there are several instances showing a tendency to neglect staff meetings. This has been noted by the College and a check is now being made throughout the country which may result in several hospitals being placed upon probation or even removed from the standardized list.

A new hospital of 100 beds is under construction at Longview which will no doubt comply with the requirements of the Minimum Standard and should be an excellent modern institution.

It is recommended that in the interest of brevity the name of this committee be changed to "The Hospital Survey Committee," the duties to remain the same.

It is suggested that after the vacation season each committeeman make a careful survey of his district, using the list published by the Council on Medical Education and Hospitals as a basis. This survey will be forwarded to the Council as a basis for the annual revision. Such a survey has not been possible earlier on account of the fact that the redistricting of the state was completed only a short time before the summer vacation, and the necessary information has not been prepared for the committee members.

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#### MENTAL HYGIENE

Dr. Arthur P. Calhoun, Chairman

There is no medical organization in the state for consideration of mental hygiene problems. All that is done is more or less sporadic attempts to improve matters by various lay bodies. We feel that the forming of an organization headed by medical men to promote mental hygiene is a very worthy and important step, but it cannot be done without financial backing.

Your committee had one meeting prior to the last session of the Legislature, at which time it was agreed to use our best efforts in support of a bill providing for the creation of a new institution for the care of mental defectives. Owing to the session being cut short, no such bill was introduced. The chances for such a bill being passed upon the reassembling of the Legislature in November seems to be remote. If it does pass, it will probably not receive executive favor, owing to the large expenditures necessary in establishing a new institution. However, we feel that it should receive the support of the State Medical Association.

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#### CANCER

Dr. M. G. Sturgis, Chairman

Through the valued assistance of the county chairman, a canvass was made of the entire state to ascertain what doctors would be interested in a public discussion of the cancer question. There was a gratifying number of responses, and the film, "The Reward of Courage," was forwarded to sixteen of the towns where it was exhibited. This number, while small, represents a very considerable achievement, since this film has been shown throughout the state on three prior occasions, and some of the county chairmen felt that it was a bit antiquated. Additional pieces of printed information were distributed among those doctors who were interested.

It seems probable that this committee will have much more to do during the ensuing year, since the American Society for the Control of Cancer will probably institute another campaign this fall, although this is a matter which has not as yet been decided upon.

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#### PUBLIC SCHOOL EDUCATION

Dr. C. W. Sharples, Chairman

The functions of the Committee Upon Education, I think, are so closely interwoven with that of Child

Welfare and another one having something to do with social affairs of the country, that I do not believe there is very much for this committee to do, and I would recommend that it be merged with the other committee.

There has been more or less of a movement, however, to have established additional accommodations for the care of the children who are more or less subnormal and too much so to be admitted or taken care of in the public school systems. The solution of this difficulty, I believe, the medical men can to a certain extent help, if they will. I believe their attention should be called to the fact that there is a need for that sort of thing all the time and that it is a serious detriment, both to the community and to the school system, to have to care for these children. It is more or less of a detriment that, when they get a few years older, they are permitted to associate promiscuously with children of a higher type.

#### SOCIAL HYGIENE

Dr. Chas. F. Engels, Chairman

Inasmuch as it seems impossible to interest the general medical profession in this subject, our work is being done only in the larger cities, where we have specialists in this branch to direct our efforts. We have covered King, Pierce, Spokane, Yakima and Grays Harbor counties. Our efforts have included lectures, literature distributed, personal advice for those interested, and direct charge or working contact with clinics for venereal disease cases.

Statistics regarding venereal diseases are of no value, due to the indifference on the part of the medical profession to the law requiring reporting, but the growing tendency of cities to enforce examination of all persons handling food, and the routine Wassermann, have demonstrated the vast number of hitherto unsuspected cases. Health departments are seeing the wisdom of paying greater attention to this problem, as a factor influencing morbidity and morality.

The question of prostitution always looms in the mind of the church element but these are the least harmful as compared with the great class of clandestine offenders and in these latter the use of intoxicating liquors is a factor, as it always has been. The routine examination of prostitutes and their enforced treatment with confinement if necessary controls this class rather well in our large cities and seems the best way to handle this problem.

Our hopes for the future include more candid information supplied through our educational institutions and convincing the medical profession that venereal cases should be referred to the specialist. There are still too many initial lesions being treated casually with local applications, unrecognized during the precious early days of the disease and there are also too many Neisserian infections being carried by ex-patients who believe themselves cured. Here is at least one fertile field for improvement and strengthening of the profession from within which seems more worthwhile than repelling attacks from without.

#### TUBERCULOSIS

Dr. F. A. Slyfield, Chairman

The committee has carried on considerable correspondence with the various county societies all over the state in attempting to arouse interest in the search for, and the detection and management of tuberculosis. The response has been most encouraging.

The committee requested the president and secretary of each county society to give over one of its programs during the month of May, 1925, to the Tuberculosis Committee. We then wrote a paper which has been read by some member of the committee at nearly all of the county societies. The paper represents an attempt to unify physicians generally in the matter of standardization on the following points:

1. Reasons for suspecting tuberculosis.
2. Vital points in the examination.
3. Management of the case.

The work has been highly interesting to the committee and we have reason to believe from the prolonged discussion which has arisen at each meeting that definite good will result to the tuberculosis patient and to the general physician.

#### PUBLIC HEALTH AND EDUCATION

Dr. D. C. Hall, Chairman

The committee has suffered an irreparable loss in the death of Dr. J. B. Mowell, of Olympia. He was one of the most active members and was always working toward a better understanding between patient and physician.

Soon after the personnel became known it was obvious that they could not be called together, hence all the work has been carried on by correspondence. The members were appointed from the near environs of an educational institution, as it was the intention to devote considerable effort to establish hygiene courses or a series of lectures in all the educational institutions, the thought being that the training of the young intelligencia in matters of health was the best way to combat the insidious encroachments of sophistry and commercial exploiters.

All our educational institutions above the high school conduct courses in hygiene. This does not mean much from the standpoint of hygiene as we understand it, as courses in bacteriology and physiology are listed as such, as well as courses in personal and public health. An attempt was made to organize a course of lectures in each institution, either as a part of a regular course or independently.

The following set of lectures was organized as an experiment, but on account of the lateness of the season they were postponed until a more favorable part of the year. The lectures were to be given Sunday afternoon in Meany Auditorium, advertised and managed by the University. The idea was to have a synopsis made of each lecture, these to be forwarded to each member of the committee who would manage the local campaign, and organize lectures in various towns throughout his district. The lecturers would

be local men or from the nearest city. The first series of seven to be followed by other series until the entire season has been pretty well covered:

1. Nervous Disorders, Their Significance, Early Diagnosis, Hereditary Factors, Cause and Treatment. Dr. E. Weldon Young.

2. The Progress of the Art of Healing from the Realm of Speculation to that of Science. Dr. H. J. Davidson.

3. Birthday Examination. Early Recognition of Disease. Dr. J. B. Eagleson.

4. Goiter Prevalence, Prevention and Cure. Far-reaching Effects on Infant Mortality. Dr. D. C. Hall.

5. Eyesight, Education and Economics. Dr. H. V. Wurdemann.

6. Cancer, Early Symptoms, Prevention and Treatment. Dr. O. J. West.

7. Tuberculosis, Early Symptoms, Prevention, Treatment and Cure. Dr. W. S. Griswold.

Through the efforts of this committee the lectures for the University postgraduate medical course were made available for public lectures. Drs. Lewellys F. Barker, John G. Clark and V. P. Blair, under the management of the Public Health League, gave addresses to twelve hundred laity. Dr. Barker also addressed an open assembly at the University, at which fifteen hundred were reached.

For the Tacoma district Dr. W. N. Keller reports that in the schools the question of nutrition, food, eye defects, hearing, tonsils and adenoids is pretty well covered, and inspections are made regularly. Out of 18,000 pupils, there are about 4,000 at the present time taking iodine tablets which they purchase from the schools at 25c for the year. At the beginning of the school year the teachers discussed this question with the pupils and asked them to take it up with their parents and get permission to take the iodine. At the beginning of the next school year the same plan will be followed, and in addition each pupil will be given a circular with information on this subject to take home to his parents. Dr. Layton feels that 4,000 pupils is not a bad start, considering all the circumstances, and the interest in this work is constantly growing. Numerous talks have been made to the Parent-Teachers Association by Dr. Layton and other physicians; I made three.

When the school year opens again in September, we are of the opinion that, if articles could be put in the papers calling attention to the desirability of having the children given toxin-antitoxin, being vaccinated, and having eye, ear, nose and throat defects looked into, it would be advantageous, such articles to emanate from the school physician and the public health office and possibly the state health department. Dr. Layton feels that considerable education is needed by the public in the control of communicable diseases.

The moving picture entitled, "As to How the Fires of the Body Are Fed," which was shown at the American College of Surgeons meeting at Portland, Ore., to an audience of over 5,000, was shown in Tacoma at the Rialto Theatre five times a day for a period of eight days, and two exhibits were given at the public schools. This picture excited a great deal of comment and was favorably commented on by the

newspapers during its exhibition here. The News Tribune especially, during the year, had about six editorials on public health questions. The Kiwanis Club has given over three meetings for public health speakers during the year, one subject being entitled "Filtered Sunshine," by Mr. Weber of Seattle. Mr. Jones, of the Washington State Health League, has another appointment, and the third appointment we have not yet selected a speaker.

During the summer months, of course, all work has been virtually discontinued, but with the opening of September renewed energy will be shown.

Relative to suggestions, they are so easy to make and it is so hard to get actual work done that I am loath to make them. However, I will submit the following, which I think of practical value:

1. Think it would be well to arrange to have at least one or two short public health talks a week, on subjects which are especially interesting to laymen, broadcast by the radio.

2. Special efforts should be made to reach the young population, especially in schools and universities, as these are the easiest to teach and have receptive minds, uninfluenced by old notions and prejudices.

The district east of the mountains was thoroughly organized one year ago by Dr. Frederick Epplen and well arranged lectures given at Cheney Normal and Washington State College, by Spokane men.

The Committee recommends that this type of work be prosecuted, but is of the opinion that the Public Health League could be more effective.

#### OCCUPATIONAL DISEASES

Dr. W. S. Griswold, Chairman

As you requested, I have been making some investigation as to the danger of poisons in the industries of this state. There is not as much danger as there is in many places on account of the small amount of manufacturing and the fact that the mild weather allows more ventilation. There are more mild cases than the physician generally realizes, however.

The principal industries here, in which poison may occur, are the shingle industries, caused by cedar dust, painting industries, poison in garages and possibly in cleaning plants. Aside from the lead poison in paint there is danger from the solvent used, particularly in the quick drying paints and, since many of these are used by people in their homes, both in applying the paint and removing old paint stains, the danger is not confined to professional painters. Benzol and the related solvents seem to be the most dangerous. There is also some danger from these substances in the rubber industries here. Benzol is used as a solvent and adhesive agent.

There is a moderate amount of illness among garage workmen. This will become more dangerous as the artificial motor fuels are used. There is not a great deal of information available in literature of the early symptoms produced by these substances and I would recommend that the Committee report on

these early symptoms, so as to make the information available generally.

### INDUSTRIAL RELATIONS

Dr. C. D. Hunter, Chairman

Since the last meeting of the State Medical Association there has been a complete change in personnel of the heads of departments in the Department of Labor and Industries. Until recently it has been the policy of the Industrial Insurance Commission to continue the fee schedule adopted in 1923.

Conforming to the general policy of retrenchment of the administration, and to the fact that in the past disbursements of the department have exceeded the assessments levied against industry, it is considered necessary to lower the amount of money expended. This may be done in several ways. First, reduction of periods of disability of injured workmen; second, great reduction in the period of hospitalization; third, reduction in the amount of medical work done and in the amount paid to physicians.

On August 7 the committee met with Dr. Walter Kelton, assisted by Drs. Homer Dudley and George Swift of Seattle, and Dr. Wm. F. West of Everett. The fee schedule was gone over and reconstructed in a manner which it is presumed will be satisfactory to the Industrial Insurance Commission.

There are many fees listed in the present schedule for conditions which are rarely due to injury; others which the department does not believe are ever due to injury. There are also many procedures which are in the nature of specialty work and should be done only on consultation with the Chief Medical Advisor and after permission is granted by him. These fees are withdrawn from the published schedule, but will be determined by the commission when occasion arises.

There are no changes contemplated in hospital rates, x-ray fees and eye fees, except that epiphora, pterygium and refraction are dropped from the eye list. There are no changes listed under amputations or fractures, except in fractures of the skull non-operative. These will be compensated on a basis of work done, not as at present on a flat fee basis.

Dislocations remain unchanged, except subluxations of the sacroiliac joint, which will not be paid for unless authorized by the department. Nose fees are dropped from the list. Hernia is not considered traumatic by the department and will not be authorized.

With the exception of the following, all miscellaneous fees are dropped from the list.

#### MISCELLANEOUS FEES

Abscess, incision .....	\$ 5.00
Anesthetic, administration, major.....	10.00
Anesthetic, administration, minor.....	5.00
Assistant at operation, major.....	10.00
Assistant at operation, minor.....	5.00
Autopsy, complete with report (when ordered)	25.00
Autopsy, attending but not performing (when ordered) .....	10.00
Blood transfusion (donor).....	25.00
Blood transfusion .....	25.00

Casts (when ordered by Medical Division as treatment) arms or legs.....	5.00
Body or pelvis, including legs.....	10.00
Cellulitis \$35.00 first two weeks and \$1.00 per dressing thereafter	
Chest (punctured wound involving pleura and lung) .....	25.00
Physical examination and report by other than attending physician .....	5.00
Complete ruptured urethra with open operation	75.00
Injection of antitoxin for tetanus (subcutaneously) (each treatment).....	3.00
Joint mice, lateral incision.....	50.00
Laminectomy (special operation).....	100.00
Lunacy, examination in, including written report .....	5.00
Mileage (one way) per mile, beyond city limits	.75
Mileage (one way) per mile, night (night meaning 9 p. m. to 7 a. m.).....	1.00
Mileage (in cities) per mile, when beyond 3 miles (one way).....	.75
Night calls not paid for when covered by a flat fee .....	2.50
Subsequent home visits when not covered by a flat fee .....	2.50
Subsequent visits at office or hospital when not covered by a flat fee.....	2.00
Nephrectomy .....	125.00
Nephropexy .....	75.00
Nephrotomy .....	100.00
Operation requiring repair of abdominal viscera and subsequent treatment.....	125.00
Open operation for reduction of fracture 25 per cent plus.	
Patella, open operation.....	100.00
Paracentesis, thoracis or pericardii (special operation) .....	15.00
Physiotherapy treatments (when order by the Medical Division) .....	2.00
Plates, removal of.....	15.00
Pulmotor work, per hour.....	15.00
Rib resection .....	50.00
Spinal puncture, for diagnostic purposes.....	5.00
Infected cases, \$1.00 additional for each dressing, tendon suturing, finger or toe.....	25.00
For each addition.....	50 per cent
Tracheotomy .....	50.00
Thrombosed segment of saphenous vein.....	50.00
Wassermann .....	2.50
Ambulance (when considered necessary by Medical Division inside city limits).....	5.00

### JEOPARDIZING THE MEDICAL AID LAW

Dr. Walter Kelton, Medical Advisor of the Industrial Insurance Commission, read the following paper.

The doctors of the State of Washington are or should be vitally interested and keenly observing of the operation of the Medical Aid Act. The medical advisor should know the doctors of the state intimately, so that he can better judge their qualifications in the care of medical aid cases and in order that he may better estimate their understanding of the proper procedure in cases coming under their care.

The administration of the Act may be compared to the operations of a corporation, the medical advisor acting as the directing head of the concern. In such corporation there should, and must be as in all successful business concerns, the fullest and most complete mutual understanding and cooperation. This is for the purpose of establishing a closer contact

with the profession of the state and bringing before it some of its problems as well as our own, and if possible, by conference and discussion we may arrive at a solution of our common difficulties.

In what shall be said, let it be understood at the outset that not the slightest criticism or reflection is cast upon any previous administration. We are in accord with so much of that which has gone before that we are following the established precedent in many instances. Matters of policy, then, simply resolve themselves into a difference of personal opinion or equation and the difference of interpretation and understanding which any two men might be expected to have in the administration of this branch of the Department.

A review of the records of the Department reveals that a few years ago certain classes of industry had a ratio of 2c a day per man. These same classes today have a ratio of 6c and 8c per day. Recognizing that there has been an increased amount of industry over past years and a greater number of industries classified under the Medical Aid Act, there has also been an intensive campaign of education along the lines of prevention of accidents, which to some degree, at least, would offset the increase in numbers of workmen coming under the provisions of the Act. It logically follows, then, that there must be some other underlying cause for the tremendous advance from 2c per day to the maximum of 8c and which cannot be explained away by the numerical increase of industrial occupation. What is the cause? This question is repeatedly asked us by the operators of industry, sometimes individually, many times collectively. On occasion the opinion has been expressed that certain industries will have to close down unless something can be done to reduce Medical Aid cost, since they cannot very much longer withstand the constantly rising expense of operation.

From our observation during the past six months, we believe that the operators of industry are right as protesting the rapidly advancing expense of operation of this Department. The Medical Aid Act can be operated for 40 per cent its present cost without failing to give the actually injured workman every bit of medical aid and hospital care, to which he is entitled and without failure to fully remunerate the doctor for his services. This cannot be done at department headquarters. It cannot be done by the medical advisor. It can be accomplished by a better understanding upon the part of the doctors of the state of the problems with which the Department has to deal, and through a more active interest upon the part of the employers.

Before proceeding with the discussion of some of the most important problems, let us first consider the outcome in the event we fail to materially reduce the cost of operation. Employers of labor, growing restive under the advancing cost, have, without thoroughly analyzing the cause therefor, determined in some localities to institute in the State of Washington competitive insurance. As a matter of fact, at the present time a well formulated program is

mapped out for the presentation before the next Legislature of a bill, the purpose of which is to establish competitive insurance in this state.

Discussion of the iniquities of competitive insurance need hardly be entered into. It is only necessary that one should have even a kindergarten knowledge of the vicious abuses and injustices done the doctor in those states wherein this plan is at present operative. There are only the selected few doctors who are permitted to treat cases for these companies. The fee is arbitrarily named and must be accepted without protest or, in event the doctor does protest the fee allowed, he does so at the expense of being allowed no further reference work. Treatment is closely and carefully scrutinized and only an amount equivalent to the average in a given case is paid for. The nefarious method of "farming out" cases to selected doctors is another objectionable and obnoxious feature. And then it must not be forgotten that suit can be brought against a doctor who fails to accomplish a good result, even in this character of surgery, which under most favorable circumstances, has a maximum of failure as compared to surgery in any other field.

There is another point to which our attention should be directed in the solution of the problems facing us in the operation of the act. It is firmly believed that, unless we band ourselves together in common cause to bring about the obviously essential reduction in the cost of operation of the Medical Aid Act, our failure to do so will be the means of driving us, if not into competitive insurance, then surely sooner or later into a program even less desirable—socialized or state medicine. We do not believe the doctors of the state will recognize or accept either of these contingencies as in any manner a situation we can contemplate lightly. We only need to recognize that by and through our own acts we are bringing upon ourselves a status which every honest and competent physician heartily opposes.

Now let us go back to the question so often asked by the employer, "What is the cause of the continual rise in cost?" Insofar as the doctors are concerned, and apart from the responsibility resting with the employers, the doctors' moral responsibility to the Department should be more thoroughly recognized and more positively emphasized. In our medical training we are taught to prevent disease; and so in our dealings with the Department we should carry out this principle of prevention and not inflict upon the Department so many unworthy and unjustifiable claims for compensation.

The doctor has his opportunity for this service in his first contact with the patient. He should make sure as nearly as possible that the claimant actually sustained an injury as alleged. He should weigh the matter and determine in his own mind whether the circumstances as related actually did produce injury. He should not foist upon the Department a lot of ridiculous claims, simply for the purpose of maintaining his pleasant relations with his patient. The claimant should be told frankly that his claim in such

a case is not a just one, and he should conclude by refusing to sanction it and should notify the Department of his action. In this manner the physician in his first contact can eliminate many claims, which when once they are admitted sometimes are the means of taking from the funds many thousands of dollars.

We may mention in passing, just a few of the more ridiculous claims signed by doctors as due to injury: appendicitis, gastric ulcer, Bright's disease, diabetes, carcinoma (following as early as three weeks after accident), typhoid fever, intestinal flu, etc. And then there is the far greater opportunity for doing justice at the time of the doctor's first contact by careful and thorough differentiation between suffering as result of actual injury and disease of perhaps long duration or congenital maldevelopment, and the consequent results incidental to advancing years and to nature's processes. As a result of lack of care in making such differentiation the Department has suffered most heavily. Our observation brings us to the positive conviction that this is by far the most outstanding cause in depleting the department fund. Under this heading falls the various forms of arthritis with their causative factors not in injury but clearly in disease, tuberculosis, blood dyscrasia, other wasting diseases and old age.

Examples could be cited in this group of a few cases, each of which has already cost the Department upwards of ten thousand dollars, and are still on the payroll, in any one of which, if the case were presented to an intelligent group of medical men, the conclusion would have to be that injury as alleged had nothing to do with the condition which ensued. In two of these cases the writer has talked with the doctors, who through sympathy and not in accordance with their better judgment allowed them to get started under the Act. In one of them the doctor stated that he did not believe, and in fact he now felt quite sure there was no injury, but that he regarded it as a trivial matter and let it pass; and as a result of this inadvertance and his failure to put aside his sympathy and do justice by the Department, will probably have spent from fifteen to twenty thousand dollars before this case is brought to a conclusion.

The second obligation of the doctor in his responsibility to the Department comes in the matter of care of the injured workman. Overhospitalization and unnecessary hospitalization have also wrought havoc with the fund. The Medical Aid Law did not mean to contemplate the hospital as a boarding house or a wintering resort. Let the doctor ask himself the question: "Would I pay for hospitalization for this sprained wrist, this bruised toe, or this Colles fracture?" And if his answer is in the affirmative, then let the patient be hospitalized. Some of you may be surprised to know that weeks, and in a few instances, months of hospitalization have been given to just such cases.

The third point in the doctors' responsibility is of minor consideration by comparison to those just mentioned, but though it is of minor importance, this is

no cause for relaxation in accepting responsibility. We refer to the extension of time loss by signing the card month after month that the claimant is unable to return to work, carried on sometimes almost until the claimant has fallen a victim to disease or is decrepid with age.

The next item inflicting heavy inroads into the Department's funds is that resultant upon prolonged and unstinted forms of treatment without bringing any result. Under this heading come physiotherapy, diathermy, the so-called Goldthwaite reduction of the so-called sacroiliac slip, and other forms of treatment which after thorough trial show clearly that no result is obtained. For example, the Department has had one bill of \$490.00 for physiotherapy, one for \$370.00 for diathermy. One patient has seven so-called Goldthwaite reductions of a so-called sacroiliac subluxation, and this was followed by a Smith Peterson operation, and the latter was followed by the claimant coming into the Department and declaring that he now had more pain than ever, and that he did not believe he ever would be able to reengage in industry.

The next item is one wherein the Department has been seriously imposed upon. While it is recognized that the elimination of infectious foci is essential to early restoration, this does not give the doctor license in the treatment of a small incised wound of the finger, to remove tonsils, take out a lot of carious teeth, or teeth involved with pyorrhea, administer treatment for syphilis (which presumably was not acquired in industry), patch up his congenitally acquired herniae and adjust all other ailments, and even attempt to take care of nature's maldevelopments at the expense of the Department.

More than any other one item in proportion to its actual existence and its comparative expense, alleged traumatic hernia has scored upon the fund. All the authorities all over the world recognize traumatic hernia, or even the influence of trauma upon hernia preexistent, as exceedingly rare. Morehead says he never saw a case. Deaver calls it a surgical curiosity. Bull and Blake state that it possibly occurs once in 10,000 cases. Yet the Department paid 370 claims in the year 1924. This because of a court decision in the Sapala case. Even in the face of a court decision adverse to all medical and scientific teaching the world over, the doctors should not so readily accept it as a fact and should revert to their training and to accepted scientific principles. We know that a preexisting hernia, which may be brought down a little more prominently by accident, can by rest and a little attention for a few days be restored to its preexisting status, and this is all that the Department should be called upon to do.

The most serious item under the heading of attempted readjustments is that of backs. There are certain types of backs, upon which any and all forms of treatment combined seem to produce no result. And in this type of case, which must be well recognized by the orthopedist, it should be manifest that no Goldthwaite reduction (of the Medical Aid Fund)

nor Smith Peterson operation, nor anything else of this character is indicated.

Incompetent treatment has brought about tremendous losses to the Department. Not every surgeon is qualified to do orthopedic surgery. There are not many general practitioners who would take care of, or attempt to take care of a penetrating wound of the eye, possibly recognizing that by so doing they might cause the loss of vision, but the vast majority will attempt to take care of the most difficult kind of fracture, which if not properly treated many times brings the workman to a permanent disability, even the loss of a member. Some contract surgeons seem to consider that because they have to pay the surgeon's fee and hospital bill when the case is not taken care of at their own hands, by virtue of this fact they must go on with the case. Such procedure many times brings disaster.

The next item is mentioned with a degree of hesitancy because it casts such serious reflection upon our profession. We refer to the padding of bills. This item would not be mentioned, if there were only one or two isolated cases, but our investigators have procured many affidavits and we have abundant other evidence which warrants mention of this point. Bills have been rendered in excess of the amount of treatment given, and treatment has been specified which has not been given at all. Radiographs have been submitted which we are prepared to prove are not those of the alleged injured workman. This society need not concern itself with this problem. We are preparing to take care of it in a fashion that will be quite effective.

#### SUMMARY

The foregoing will present to you some of the reasons why the Medical Aid Law is being seriously jeopardized and must cause you to understand why we are facing one or the other of the most undesirable contingencies—competitive insurance or socialized medicine. What is the remedy, and what will prevent this catastrophe? We believe the answer lies in the legitimate reduction, without stinting or jeopardizing the actually injured workman, of the medical aid cost, and that this can be accomplished:

By the doctor's acceptance of his responsibility to the Department in his first contact with the claimant.

By refusing to make of the hospital a boarding house or a haven of rest.

By refusal to extend time loss until the ravages of time have reaped their inevitable reward.

By denying the claimant the right to have all of his intercurrent ailments taken care of at the Department's expense.

By recognizing the fact that orthopedic surgery is perhaps the most difficult kind of surgery to attempt and that only skilled orthopedists should attempt service in any aggravated case.

By not attempting to correct such maldevelopments of nature as present no hope of correction.

By the county societies appointing committees to aid and cooperate with the Department in the item of unnecessary hospitalization.

By conscientiously doing by the actually injured workman and by the Department as you would do if you were caring for one of your own family and paying the expense therefor.

It was moved that the paper be read before the General Session. Seconded and carried.

The Secretary-Treasurer presented the names of the deceased members as published in the program. It was moved a committee be appointed to draw up resolutions. Seconded and carried.

The President appointed the following committee:

C. A. Smith, Chairman, D. E. McGillivray, C. R. McCreery.

#### REPORT OF BOARD OF TRUSTEES

Report of the Board of Trustee's meeting was read by the Secretary.

The meeting was called to order by the President at the Rainier Club at 6:30 p. m. September 16, the following Trustees being present: D. A. Nicholson, J. B. Munly, F. H. Brush, C. B. Ward, R. J. O'Shea, C. H. Thomson, A. O. Loe, S. S. Oppenheimer, C. R. McCreery, J. H. O'Shea.

The Secretary presented audits which were ordered placed on file.

It was moved that we recommend to the House of Delegates that full time medical officers of the U. S. Army, Navy and Public Health services may be enrolled as members without the payment of dues. Seconded and adopted.

The Standard By-Laws adopted by the A. M. A. for State Associations were presented and found to be substantially in accord with our present By-Laws. Several minor changes, especially in the method of electing officers, were ordered recommended to the House of Delegates as rejected.

The question of whether physicians should be granted special rights in the Traffic and Parking Laws was ordered laid on the table.

The communication from the Bureau of Legal Medicine of the A. M. A. in regard to the proposed reduction of the Harrison tax and the deductions allowed physicians under the Income Tax Laws was discussed and a committee was recommended to take up this matter.

The motion was adopted that we recommend to the House of Delegates that the following resolution be adopted:

**RESOLVED:** That the President of the Washington State Medical Association shall immediately appoint a committee, and annually thereafter, composed of one member from each county medical society, with the Secretary of the State Medical Association as ex-officio chairman of such committee, for furtherance of the financial and other material interests of the Public Health League in their respective communities. This committee shall be called the Committee on Public Health Activities. This committee shall meet with the Executive Committee of the Public Health League at each annual meeting of the Washington State Medical Association.

A letter from J. Speed Smith was read and after considerable discussion it was recommended that it be considered unethical for physicians to guarantee a cure.

The annual report of the Public Health League was then presented and placed on file.

A motion was then adopted recommending the appointment of a committee to redistrict the state.

The Board of Trustees then adjourned to meet with the Delegates the following morning.

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The Report of the Board of Trustees was ordered accepted and its several recommendations were then taken up.

The Secretary-Treasurer recommended that full time Medical Officers of the regular Army, Navy and U. S. Public Health Services may be carried on the rolls without the payment of dues.

The recommendation was seconded, carried and ordered laid on the table for one day.

The Secretary-Treasurer recommended that, where it is not possible to maintain a County Society, that territory be added to the nearest active medical organization in order that the state may be fully organized.

The President appointed the following Committee for the reapportionment of territory: C. H. Thomson, Chairman, F. Epplen, A. E. Stuh.

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#### MALPRACTICE SUITS

The following letter from J. Speed Smith, attorney for the State Association, was read by the Secretary-Treasurer:

Seattle, Washington,  
August 20, 1925.

Dr. C. H. Thomson,  
Cobb Building,  
Seattle, Wash.  
Dear Sir:

Upon two or three occasions I have discussed with you the advisability of the physicians of this state taking some action to protect themselves against malpractice suits which are based upon a guaranteed cure.

As you understand, in the absence of a promise of cure there is no implied promise on the part of a physician or surgeon to effect a cure. However, the courts have held that, if a physician contracts with the patient to effect a cure and he fails therein, the patient has a cause of action against him. While we know, as a matter of fact, that physicians do not agree to guaranty a cure, if a patient bases a suit upon such agreement, he may prove said agreement by the testimony of himself and relatives that such cure was guaranteed.

I discussed with one or two state representatives the possibility of having a law passed, requiring that such contract to cure must be in writing before a suit could be based thereon. They suggest that it would doubtless be difficult to get such an act through the legislature for the reason that it would be claimed it was class legislation. Whether such a law could be passed I am unable to state, but it occurs to me that

physicians and surgeons of this state should carefully consider this question and adopt some means for their protection in this regard.

One method that suggests itself to me at this time is that a surgeon could require the patient, or a close relative on the patient's behalf, to sign a statement that it was understood a cure was not guaranteed.

I trust the foregoing sufficiently covers your request.

Yours very truly,

(Signed) J. SPEED SMITH.

It was stated that the Board of Trustees recommended that it be considered unethical to guarantee a cure.

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#### PUBLIC HEALTH LEAGUE ACTIVITIES

The following letter from the Public Health League was read:

Seattle, Sept. 10, 1925.

Board of Trustees of the Washington State Medical Association,  
Dr. C. H. Thomson, Secretary.  
Gentlemen:

Since the organization of the Public Health League there has been a growing conviction that the relation between it and the State Medical Association should be made as close as would seem consistent with the accomplishment of the aims of both organizations, while maintaining before the public as separate existence of each without conflict or overlapping of their respective activities.

Many plans have been suggested, to each of which cogent objections could be raised. It was determined, therefore, to have a joint conference of officers of the State Medical Association and the League to consider the matter. At this conference, after a full discussion, a plan was suggested by Dr. C. H. Thomson which met with the hearty approval of all present. We submit, therefore, for your consideration a resolution embodying the results of this conference, to-wit:

**RESOLVED:** That the President of the Washington State Medical Association shall immediately appoint a committee, and annually thereafter, composed of one member from each county medical society, with the Secretary of the State Medical Association as ex-officio chairman of such committee, for furtherance of the financial and other material interests of the Public Health League in their respective communities. This committee shall be called the Committee on Public Health League Activities. This committee shall meet with the Executive Committee of the Public Health League at each annual meeting of the Washington State Medical Association.

Yours respectfully,

(Signed) E. WELDON YOUNG,

President.

The Board of Trustees recommended to the House of Delegates that the resolution be adopted, dropping the previous Oregon plan. It was moved the recommendation of the Board of Trustees be accepted. Seconded and carried.

ANNUAL REPORT OF THE PUBLIC HEALTH  
LEAGUE

Seattle, Sept. 1, 1925.

To the President, the Secretary and  
The Honorable Board of Trustees of  
The Washington State Medical Association.  
Gentlemen:

As the Executive Secretary of the Public Health League, I offer herewith my annual report to the Association, covering the twelve months' period ending September 1, 1925.

FINANCIAL

The receipts of the organization covering this period show a small increase over the receipts for the same time last year. One of the features of our financial drive was the solicitation of special legislative funds from a group of men who were not and had not been affiliated with the League as members. This drive brought a favorable response from seventy-five men and was helpful in meeting the legislative activities of the year, which involved considerable extra expense.

EDUCATIONAL

This year has seen the usual distribution of health literature as in the past. Many articles of interest were printed in pamphlet form and sent over the state to selected names from the organization mailing list, which was built up two years ago. The request for the reprinting and distribution of several articles appearing in the *Messenger*, by officers of parent-teacher organizations and women's clubs, was promptly met.

Special articles for the country press, a plan developed some time ago, have been furnished. Another feature of publicity has been the establishment of a radio bureau and the maintenance of a definite weekly health service of this kind through the courtesy of the *Seattle Times*. It is expected that this phase of educational effort may be enlarged this fall and that other stations in the different sections of the state be utilized for this purpose.

The Executive Secretary, under the direction of the League Executive Committee, has continued his club luncheon tour, speaking before Rotary, Kiwanis, Lions and other clubs of this character in every city in Washington. The purpose of such talks has been to reach an important part of the community leadership of the state with the vital message of the accomplishments of scientific medicine, its utility in all the problems of health and the danger of public indifference to strong and life-saving license statutes.

LEGISLATIVE

The larger effort of the League for the period just closed was in the direction of legislation. For the first time the organization conducted a state-wide inquiry as to the attitude of legislative candidates on the issues of health. In some counties the printed questionnaire was used, while in others committees called on the various ones seeking suffrage. Captains were chosen for each county and through these the League was able to make itself felt in the different sections.

Several candidates, including a cultist senator from an eastern Washington county, whose activities and views indicated strong opposition to effective license and health laws, were fought in the open, and with marked success. In one single legislative district more than 6,500 postal cards were prepared and mailed through League management.

Many men were selected at the polls who were active friends of the public and pledged to assist in such a program at Olympia. Six physicians were elected to the legislature, a sufficient number to give scientific domination on the very important committees of the House and Senate.

The results obtained were satisfactory. The action of the Governor in asking for a split session interfered with the general program of the organization and it was necessary to carry many of our plans over to the second session, which will probably be called for next January. The passage of the Revocation of License bill and in the raise obtained for a Department of Licenses for investigational work the League was entirely successful. In the preliminary work on the Basic Science Bill, which was pressed early in the session before the gubernatorial plea for a short session had been made, public hearings were held and the bill progressed to the floor of the Senate with a favorable vote in the Senate committee of six to one.

It is believed that the remainder of our legislative program, which will receive the attention of the League officers, at the next session, can be moved forward to successful results. The ground work has been carefully laid and these vital measures for the public health should receive favorable consideration.

Respectfully yours,

(Signed) ROBERT O. JONES,  
Executive Secretary.

TAX REDUCTION

The A. M. A. letter formulating a tax reduction program was read. The letter follows:

August 14, 1925.

Dr. C. H. Thomson, Sec.,  
Washington State Medical Assn.,  
508 Cobb Bldg.,  
Seattle, Washington.

Dear Dr. Thomson:

You are doubtless already familiar with what is being done on behalf of the Congress and the Treasury Department toward formulating a tax reduction program for the people generally. The article in the *American Medical Association Bulletin* for June on the tax reduction program in relation to physicians has doubtless kept your information up to date with respect to what the medical profession seeks. For your convenience, however, I enclose a reprint of that article, together with an addendum that should be carefully read.

The State of Washington has a peculiar duty to perform with respect to this matter, for the state is represented on the House of Representatives Committee on Ways and Means by Honorable Lindley H. Hadley of Bellingham. It is the chairman of the

committee, Honorable William R. Green of Iowa, who is taking the most active part in formulating the tax reduction program, and who doubtless will have to sponsor any bill that his committee may formulate for introduction into Congress. The committee, of which Representative Hadley is a member, will be called together on or about October 19, to formulate such a bill.

While it is important that you convert to our cause the entire Congressional delegation of the State of Washington, it is particularly important that you at once convert to our cause Representative Hadley. If you can make him such an ardent convert that he will at once write to the chairman of his committee, Representative Green, on our behalf, it will be very helpful. At least, he should be converted to our cause before he attends the October meeting of his committee.

In some cases it seems to have been deemed expedient to get county societies to get into touch with the Senators and Representatives within whose districts such societies function. Oral interviews held under the auspices of such societies now, while Senators and Representatives are at home, can be more effectually followed up later than could written communications sent at the present time. Is such a plan worth trying in the State of Washington?

I hope you will keep me in touch with whatever you may do with respect to this matter.

Yours truly,  
(Signed) WM. C. WOODWARD,  
Executive Secretary,  
Bureau of Legal Medicine and Legislation.  
July 4, 1925.

#### DEDUCTION OF TRAVELING EXPENSES

Dr. C. H. Thomson, Sec.,  
Washington State Medical Assn.,  
508 Cobb Bldg.,  
Seattle, Washington.

Dear Dr. Thomson:

In computing physicians' income taxes, the Commissioner of Internal Revenue refuses to deduct traveling expenses made necessary by attending meetings of medical organizations. He does this notwithstanding the law expressly requires that, "In computing net income there shall be allowed as deductions: (1) All ordinary and necessary expenses paid or incurred during the taxable year in carrying on any trade or business, including . . . traveling expenses (including the entire amount expended for meals and lodging) while away from home in the pursuit of a trade or business. . . ."

In a letter addressed to the Utah State Medical Association the Deputy Commissioner has classified the expenses referred to above as "personal expenses" and in that way sought to justify the denial of the physician's right to deduct them.

This refusal of the Commissioner and the classification by the Deputy Commissioner were apparently made without taking evidence to enable them to

determine the purpose or nature of the medical meetings or the custom of the medical profession with respect to them.

To aid in procuring the amendment of the Revenue Act of 1924 to offset the Commissioner's action, we should submit concrete evidence, showing that the meetings of medical organizations are essentially professional in character, and not merely personal or social functions. This can best be done by programs of such meetings. Will you not send me, therefore, one or more copies of each of the programs of the annual meetings of your Association for as many years back as you conveniently can? I shall be glad to receive them as soon as practicable.

Yours truly,  
(Signed) WM. C. WOODWARD,  
Executive Secretary,  
Bureau of Legal Medicine and Legislation.

It was recommended that the President appoint a committee to go into the matter with Representative Hadley. The following committee was appointed: Dr. A. McRae Smith, Dr. W. D. Kirkpatrick.

It was moved that a golf trophy be given by the State Association to be played for annually. The amount of the trophy was not to exceed \$100.00. Seconded and carried.

#### UNIFORM BY-LAWS

The following letter from the A. M. A. in regard to the adoption of uniform by-laws for State Association, was read:

Chicago, September 2, 1925.

Dr. C. H. Thomson, Secretary,  
Washington State Medical Association.

Dear Dr. Thomson:

I am enclosing a suggested draft of a Constitution and By-Laws for state medical associations, prepared by the special committee of the House of Delegates of the American Medical Association and presented to the House at the Atlantic City Session.

I was instructed by the House of Delegates to refer this draft to the constituent state associations of the Association.

It is not intended to be anything more than suggestive, and if thought suitable for the purpose, to serve as a basis for bringing the constitutions and by-laws of all constituent associations into such uniformity as may be thought desirable.

The Committee of the House of Delegates was instructed to study the constitutions and by-laws of constituent state associations, of component county societies, and of the American Medical Association. It was first thought that the study should start with the constitutions and by-laws of the component county medical societies, but as the component societies are chartered by the constituent state associations, it seemed desirable to the committee that the constitutions and by-laws of the constituent state associations should receive first attention, and that after the draft prepared by the committee had been considered by these organizations and the results of

these considerations made known to the committee, the study of the constitutions and by-laws of the component county societies could then be taken up. After a supplementary report of the committee has been submitted to the constituent state associations and component county societies, the constitution and by-laws of the American Medical Association might then be studied with a view of suggesting such changes as might be necessary to make it conform to the organic instruments of the constituent and component societies.

It is respectfully requested that the enclosed draft be submitted to the house of delegates of your state association, and that you advise me as to any action that may be taken in the matter.

Very truly yours,

(Signed) OLIN WEST.

The Secretary stated that the Trustees found our by-laws substantially in accord with those proposed by the A.M.A., with the exception of several minor changes, especially connected with election of officers. The Trustees recommended that our by-laws be not changed. The recommendation was adopted.

#### SECOND SESSION

SEPTEMBER 19

The meeting of the House of Delegates was called to order by the President at 9 a. m. Roll being called, a quorum was found present.

#### REPORT OF COMMITTEE ON NECROLOGY

The report of the committee to draw up resolutions in regard to the deceased members was called for. Dr. Smith read the following:

September 17, 1925.

To the House of Delegates,  
Washington State Association.

Gentlemen:

During the past year death has removed from our number the following thirteen members:

Franklin Carr, of Hoquiam, died July 11, 1924, of pneumonia, aged 61 years. He graduated from Rush Medical College in 1884. He settled in Montesano in 1889, going to Hoquiam in 1924. Beside practicing medicine he was engaged in the banking business.

Charles B. Cowan, of Seattle, died August 23, 1925, of disease of the heart, aged 47 years. He was born at London, Ontario, and graduated from University of Western Ontario Medical School of that city. He began practice in Seattle in 1900. During the war he served as lieutenant in the medical corps being stationed at the Presidio, San Francisco.

I. M. Harrison, of Seattle, died November 24, 1924, aged 69 years. He was born in Missouri in 1856. After graduating from the Missouri state normal school in 1876, he received his medical degree from the University of Michigan in 1880. In 1883 he settled in Port Townsend. Also, at different times he practiced at East Sound, Roche Harbor and Seattle. For several years he served on the Seattle board of health, having been president in 1904.

R. H. Harrison, of Tacoma, died at Crocker Lake December 30, 1924, of pneumonia, aged 67 years. He was born in Ireland in 1858. He came to America,

locating at Grays Harbor, in 1890. For 27 years he practiced in Tacoma. At one time he was Pierce county health officer.

C. A. Hauber, of Chehalis, died February 5, 1925, from septic infection, aged 58 years. He was born in Walla Walla county. During the world war he served in the army, being stationed at Vancouver. Five years ago he located for practice at Chehalis.

Scott B. Hopkins, of Spokane, died April 9, 1925, from disease of the heart, aged 52 years. He was born in Iowa and graduated from Jefferson Medical College. He practiced in Iowa until 21 years ago, when he moved to Spokane. He was a well-known eye, ear, nose and throat specialist and was an influential citizen.

John A. MacKinnon, of Seattle, died July 7, 1924, from ascending multiple sclerosis, aged 68 years. He was born in Prince Edward Island in 1857. He graduated from Trinity college, University of Toronto, in 1888. He began to practice at Lowell, Mass., and a year later moved to Maysville, Mo. In 1896 he located in Southern California. In 1901 he moved to Seattle, where he engaged in eye, ear, nose and throat work.

George N. McLoughlin, of Seattle, died June 2, 1925, from Hodgkin's disease, aged 57 years. He was born in Nashville, Tenn., in 1868. He graduated from George Washington University medical school in 1898. In 1900 he was appointed agency physician at the Yakima Indian Reservation, serving later as physician with the U. S. Geodetic Survey. He located in Seattle in 1904. At the time of his death he was serving as city health commissioner.

David A. Mitchell, of Seattle, died February 7, 1925, from angina pectoris, aged 76 years. He was born in Wisconsin in 1849, and obtained his medical degree from Jefferson Medical College. In 1887 he located at Newcastle, moving to Seattle in 1894. He was in active practice to the hour of his death, and was referred to as the typical old-time family physician.

John W. Mowell, of Olympia, died July 7, 1925, of intestinal carcinoma, aged 64 years. After graduating from the Normal school at Warrensburg, Mo., he obtained his medical degree, in 1888, from Missouri Medical college, now the Washington College at St. Louis. In 1889 he located at Tumwater, moving the following year to Olympia. From 1911 to 1917 he was chief medical adviser to the first industrial insurance commission. From 1917 to 1921 he was chairman of the state medical aid board. During his connection with the state work, he published a series of bulletins on fractures, which were of distinct value in this line of work.

L. C. Neville, of Seattle, died September 1, 1924, from disease of the heart, aged 61 years. He was born in Ohio in 1863, and received his medical degree from Toledo Medical College in 1889. He located for practice in Seattle in 1890. He had a wide acquaintance among the older residents of the city.

John R. Persons, of Seattle, died August 27, 1924, from cerebral hemorrhage, aged 48 years. He was born in 1876 in Norwalk, Ohio. He graduated from

Northwestern Medical School in 1901. After serving hospital internship he continued his studies at Harvard Medical School. He practiced at Tyndall, S. D., Coupeville and Oak Harbor, Wash., locating in Seattle in 1921.

Felix J. Stewart, of Tacoma, died March 5, 1925, from cerebral hemorrhage, aged 66 years. He graduated from Chicago Medical College in 1885. For the past twenty-nine years he practiced in Tacoma. At the time of his death he was serving his second term as coroner.

The committee offers the following resolution:

*Whereas*, the above mentioned members of Washington State Medical Association have been removed by death during the past year and, owing to their professional ability and personal qualifications, their death has resulted in a distinct loss to this association, therefore, be it

*Resolved*, that this organization hereby gives expression to its sorrow and regret at the loss of these members, and that these resolutions be incorporated in the minutes of this meeting.

(Signed)

CLARENCE A. SMITH  
D. E. MCGILLIVRAY  
CHAS. R. MCCREERY  
Committee

#### REPORT OF AUDITING COMMITTEE

The report of the Auditing Committee was read and accepted.

September 12, 1925.

Board of Trustees,  
Washington State Medical Association.  
Gentlemen.

The Committee appointed by the President to review the report of the Secretary-Treasurer, submits the following:

We have read the report and checked the items mentioned against the audits of the certified public accountant. We find in the files evidence supporting all of the statements contained in the Secretary-Treasurer's report.

Respectfully submitted,

(Signed) HOMER D. DUDLEY,  
Chairman, Auditing Committee.

The motion to enroll full time Medical Officers of the U. S. Army, Navy and Public Health Services without the payment of annual dues was amended to include the Veteran's Bureau Service. They were not to receive the journal unless they individually subscribed for it. Seconded and adopted.

#### ELECTION OF OFFICERS

The House of Delegates then proceeded to elect officers for the ensuing year (those whose terms did not expire are added to complete the list).

President, Dr. S. S. Openheimer, Spokane; term expires 1926.

1st Vice-Pres., Dr. H. G. Willard, Tacoma; term expires 1926.

2nd Vice-Pres., Dr. H. E. Cleveland, Burlington; term expires 1926.

Sec'y-Treas., Dr. C. H. Thomson, Seattle; term expires 1928.

Asst. Sec'y-Treas., Dr. J. H. O'Shea, Spokane; term expires 1928.

#### Trustees

1st District—Dr. A. O. Loe, Seattle, term expires 1927

Dr. D. H. Houston, Seattle; term expires 1927

Dr. R. J. O'Shea, Seattle, term expires 1926

Dr. C. R. McCreery, Tacoma, term expires 1926.

2nd District—Dr. E. E. Hill, Walla Walla; term expires 1927

Dr. J. B. Munly, Spokane; term expires 1927

Dr. C. L. Smith, Spokane; term expires 1926

Dr. C. B. Ward, Spokane; term expires 1926.

#### Journal Trustees

Dr. M. Langworthy, Spokane; term expires 1926

Dr. H. D. Dudley, Seattle; term expires 1926

Dr. E. W. Janes, Tacoma; term expires 1926.

#### Delegates to A.M.A.

Dr. F. Epplen, Spokane; term expires 1927.

Dr. P. D. McCornack (Alt.), Spokane; term expires 1927

Dr. D. E. McGillivray, Port Angeles; term expires 1926

Dr. D. H. Palmer (Alt.), Seattle; term expires 1926. Spokane was selected as the next place of meeting.

House of Delegates adjourned sine die.

#### SCIENTIFIC PROGRAM

THURSDAY, SEPTEMBER 17

11:00 a. m.—"Achlorhydria Family of Diseases," Dr. Henry Christian, Boston.

Discussion opened by Drs. Frederick Epplen, Spokane; J. M. Blackford, Seattle.

12:00—Public Health League Luncheon and General Meeting.

2:00 p. m.—"The New Management of Summer Diarrhea," Dr. P. D. McCornack, Spokane.

Discussion opened by Dr. J. I. Durand, Seattle.

"Fractures of the Upper Extremity and Their Treatment," Dr. W. A. Taylor, Ellensburg.

Discussion opened by Dr. S. Caldbick, Everett.

"Fractures of the Leg and Methods of Their Treatment," Dr. H. E. Cleveland, Burlington.

Discussion opened by Dr. H. C. Randolph, Aberdeen.

7:15 p. m.—Banquet, Olympic Hotel.

FRIDAY, SEPTEMBER 18

9:30 a. m.—"Deafness," Dr. Isaac M. Jones, Los Angeles.

Discussion opened by Drs. A. T. Wanamaker, Seattle; E. C. Wheeler, Tacoma.

"Cardiac Factors in Surgical Indications," Dr. George H. Anderson, Spokane.

Discussion opened by Dr. P. V. Von Phul, Seattle.

"X-Ray Symposium," arranged by Dr. C. R. Fishel, Chairman, Tacoma.

1. Demonstration of Pathologic Gall Bladders, Dr. C. J. Johanneson, Walla Walla.

2. What a Fluoroscopic of the Chest May Show, Dr. W. A. Smith, Bellingham.

3. Radiation as Applied to Cancer, Dr. L. L. Stephens, Seattle.

4. Services of the Radiologist to the Physician in General Practice, Dr. Joseph Aspray, Spokane.

2:00 p. m. "Cardiac Infarct, a Frequent and Easily Diagnosable Condition," Dr. Henry A. Christian, Boston.

Discussion opened by Drs. E. P. Fick, Seattle; J. R. Turner, Tacoma.

"Essentials of Tuberculosis for the General Practitioner," Dr. Christian Quevli, Tacoma.

Discussion opened by Dr. L. G. Woodford, Everett.

Points of Diagnosing Lesions of the Upper Urinary Tract. Lantern Slides, Dr. O. A. Nelson, Seattle.

Demonstration of Mechanical Improvements in the Treatment of Femur Fractures, Dr. Mitchell Langworthy, Spokane.

7:30 p. m. Dinner Dance, Olympic Hotel.

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SATURDAY, SEPTEMBER 19

9:00 a. m. House of Delegates. Election of Officers.

10:00 a. m. "Hematuria—A Study of 300 Cases," Dr. A. H. Peacock, Seattle.

Discussion opened by Dr. H. S. Argue, Tacoma.

"Comparative Value of Various Types of Regional Anesthesia," Dr. John S. Lundy, Mayo Clinic.

Discussion opened by Drs. C. F. Eikenbary, Spokane; E. O. Jones, Seattle.

"Mediastinal Infections," Dr. W. L. McClure, Yakima.

Discussion opened by Dr. George Miller, Seattle.

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KING COUNTY MEDICAL SOCIETY

Pres., A. C. Crookall; Sect'y, C. E. Watts

The general meeting of the King County Medical Society met in the auditorium of the Medical and Dental Building, Seattle, Wash., October 5, at 8 p. m., President Crookall presiding. Minutes of the previous meeting were read and approved. There were 101 members present.

PROGRAM

The first paper was given by Dr. W. H. Axtell of Bellingham on "Gastroenteroptosis and its Problems." Gastroenteroptosis is any displacement of the abdominal organs, whereby function is disturbed. By the non-recognition of this condition many abdominal operations fail to give desired relief. The most prominent symptoms produced by ptosis are fecal stasis, infection, mental depression, despondency, aortitis, heart lesions, colitis, mucous and ulcerative, internal hemorrhoids. The author made a strong appeal to the physician, surgeon and the proctologist to make thorough and complete examinations in every case before adopting any methods of treatment. Gastroenteroptosis is essentially a condition for the proctologist, although the fullest cooperation with other fields of medicine is recommended.

The second paper was by Dr. Lyle A. Greenwood, also of Bellingham, on "Some Observations on Blood Sugar." He mentioned the complex nature of carbohydrate metabolism, and also mentioned hyperglycemia without glycosuria, as well as the limitations in treatment to the pancreatic phase.

The applications of Drs. A. Golotzen and H. L. Jones were read, and will be voted on at the next general meeting.

PIERCE COUNTY MEDICAL SOCIETY

Pres., W. B. McCreery; Secty., W. B. Penney

The regular meeting of the Pierce County Medical Society was held in its rooms, Tacoma, Wash., September 22, 1925, Dr. W. B. McCreery in the chair. Minutes of the previous meeting read and approved.

PROGRAM

The paper of the evening was given by Dr. John Lundy, of the Mayo Clinic, on "Postoperative Pulmonary Complications after Upper Abdominal Surgery in 1200 Cases, 600 under Ethylene and Ether and 600 under Ether." This complete and interesting paper was illustrated with numerous charts, and will be published in NORTHWEST MEDICINE.

Dr. R. A. Brown reported a case of carcinoma of the stomach, with metastases to kidney, intestines and ovaries in a girl twenty years of age. Dr. P. A. Scott demonstrated pathologic specimens of the above case.

BUSINESS

Dr. Janes gave a report of the state meeting. He called attention to the large attendance and the splendid scientific program offered. He called special attention to a paper by Dr. Kelton, Medical Director of the State Industrial Bureau, in regard to unnecessary work at the expense of the state.

The transfer of Dr. G. A. Wislicenus from the San Francisco County Medical Society was read. The transfer of Dr. Clyde Gray from the Chisago-Bine County Medical Society of Minnesota, was read. The application of Dr. Scott S. Jones for membership in this society was balloted on, and he was unanimously elected.

Dr. Layton called attention to the Red Cross Drive.

Dr. Willard asked for contributions for the library, and spoke of its probable future.

There being no further business, the meeting adjourned.

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SNOHOMISH COUNTY MEDICAL SOCIETY

Pres., W. V. Fulton; Secty., N. L. Thompson

Snohomish County Medical Society held a meeting at Monte Cristo hotel, Everett, Oct. 6.

Judge Ralph C. Bell gave an address on the constitution of the United States. Dr. A. H. Gunderson presented an interesting case report.

The following officers were elected for the ensuing year: President, Dr. O. A. Thomle, Everett; vice-president, Dr. C. E. M. Touhy, Snohomish; secretary, Dr. A. P. Duryee, Everett; treasurer, Dr. L. G. Woodford, Everett; delegate to state association meeting, Dr. W. T. West, Everett; Dr. N. L. Thompson, Everett, alternate; board of control, Drs. W. C. Cox, Leo Trask, Everett and E. C. Leach, Arlington.

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WALLA WALLA COUNTY MEDICAL SOCIETY

Pres., H. A. Mount; Secty., C. R. Gowen

The Walla Walla Valley Medical Society held a meeting at Walla Walla, Oct. 24.

The following officers were elected for the ensuing year: President, Dr. E. L. Whiting; Vice-President, Dr. J. C. Lyman; Secretary, Dr. A. E. Lange; Treas-

urer, Dr. J. E. Vanderpool; Board of Censors, Drs. C. J. Johannesson, Bert Thomas, J. T. Rooks, all of Walla Walla.

**PUGET SOUND ACADEMY OF OPHTHALMOLOGY  
AND OTO-LARYNGOLOGY**

Pres., J. T. Dowling; Secty., M. J. Morris

The Puget Sound Academy of Ophthalmology and Oto-Laryngology held its regular monthly meeting at the Hotel Winthrop, Tacoma, Oct. 20, at 8:30 p. m., Dr. J. S. Davies, President, presiding. The minutes of the last meeting were read and approved.

Dr. S. S. Howe presented a case of conjunctivitis, which started five weeks ago with a red eye, and a sore, swollen, preauricular gland, possibly contracted from a house cat with an infected eye. There was a differential diagnosis between Parinaud's disease and papillary trachoma. An absence of bulbar involvement was noted. Progress will be reported at the next meeting.

Dr. W. B. Cameron showed a case of trachoma in a man 55 years of age, who had had eye trouble for a period of twenty years, resulting in acute exacerbation. He now had a corneal ulcer, pannus, transparent follicles, a lack of blood vessels, acute inflammation, iritis.

Dr. E. C. Wheeler reported a case of trachoma acquired in France. A regressing ulcer which was in the right cornea is improving under treatment with silver nitrate.

Another case of Dr. Wheeler's was one of cyclitis, beginning in the right eye. The patient has anterior synechia, in which the pupil is held down. This has occurred also in the left eye, resulting in occlusion of the pupil. Iridectomy was performed, but there is no vision as yet, and the eye is still soft.

Dr. Wheeler's third case was one of pansinusitis, in which both antra were operated on. There was polypoid degeneration, with a septum irregularity. It is to have increased drainage.

Dr. J. A. Johnson presented a case of eye injury, in which the lens was dislocated, and the cornea and choroid ruptured. The contents of the eye were supported by two conjunctival flaps.

Dr. Johnson also presented a case of injury incurred in the use of a paring knife, in which the cornea and posterior chamber were pierced, causing a loss of vitreous. There is irritation, but less photophobia now, and the eye is still soft. The parents of the patient refuse enucleation.

Dr. J. S. Davies showed a case of a boy with optic atrophy, in which there is a loss of vision and rotary nystagmus. The temporal field is obscure, his straight ahead vision being 20/50. He has been under K. I. for the past year, and apparently is stationary. An x-ray shows a large pituitary gland, but there is no sign of endocrine disturbance. He refuses operation.

Dr. Davies' second case of a boy with a soft eye, caused by having been struck by a baseball. The eye becomes irritated easily, but he is leaving it alone, hoping it will clear up.

The third case which Dr. Davies presented was one of pansinusitis. The patient had had a submucous resection, and his anterior turbinates operated upon before. The sphenoids and nasofrontal ducts were opened. Three or four times a month the sinus closes up, causing headaches, then in three or four days it opens up again, drains, and the patient is comfortable.

**OREGON**

**LANE COUNTY MEDICAL SOCIETY**

Pres., N. G. Nelson; Secty., L. S. Kent

A regular meeting of the Lane County Medical Society was held at Hotel Osborn at Eugene, October 15. Following the dinner the following program was presented.

"Diseases of the Prostate Gland" by Dr. E. L. Zimmerman of Eugene. He reported a number of cases illustrating the paper.

"Importance of Nasal Infection in Relation to Head and Eye Diseases" by Drs. O. R. Gullion and Delbert Stanard, of Eugene.

**POLK-YAMHILL-MARION COUNTIES SOCIETIES**

Pres., E. E. Fisher; Secty., D. R. Ross

Polk-Yamhill-Marion County Society held a meeting at Salem, Oct. 20. Following a dinner at the Gray Belle, the following program was presented:

"Coronary Thrombosis and its Consequences" by Dr. R. L. Benson of Portland. This was discussed by Dr. L. O. Clement of Salem.

"Thyroid and Some of its Disturbances" by Dr. F. R. Menne of Portland.

**PORTLAND CITY AND COUNTY MEDICAL  
SOCIETY**

Pres., H. C. Bean; Secty., K. H. Martzloff

The first meeting of the fall session of Portland City and County Medical Society was held at Portland Hotel, Portland, Ore., Wednesday evening, Oct. 7, 1925, with President Bean presiding. The minutes of the previous meeting were read and approved.

The names of the following doctors were presented as applicants for admission, to be voted upon at the next meeting: G. K. Armen, T. W. Adams, C. H. Bastron, I. E. Barrett, H. C. Blair, L. P. Gambee, J. D. Leonard, J. T. Mackay, Earle Prindle, L. K. Poyntz, J. O. Roble, F. T. Rucker, W. R. Taylor, Quentin Tucker, F. D. Watts.

The names of Drs. R. R. Hamilton and A. E. Gourdeau were voted on and they were regularly elected to membership in the society.

Captain Donnelly was introduced by Dr. Pettit, and spoke a few moments concerning the purpose of the Gorgas memorial.

The first paper of the evening was then given by Dr. John A. Saari, this being a ten minute talk on the prevention of diphtheria, forming a continuation of the series of ten minute talks on fairly well standardized medical procedures.

Dr. Albert Holman read the second paper of the evening, entitled "Prenatal care." He covered the subject in a most interesting and conservative man-

ner. Discussion was begun by Dr. Albert Mathieu, followed by Drs. Cardwell, C. U. Moore and Eugene Steinmetz.

There being no further business to transact the meeting was adjourned.

A regular meeting of the society was held at Portland Hotel, Oct. 21. In the absence of Drs. Bean and Benson, Dr. C. J. Smith presided as chairman. Minutes of the previous meeting were read and approved.

The following physicians were duly elected to membership in the society: T. W. Adams, C. H. Pastron, L. P. Gambee, J. D. Leonard, E. S. Prindle, L. K. Poyntz, F. D. Watts, G. K. Armen, H. C. Blair.

The first paper was read by Dr. L. Howard Smith: "The Acute Exanthemata, their Significance and Differential Diagnosis." Dr. Smith treated his subject exceptionally well for the brief space of time allotted to him.

The second paper, "Obstructions of the Esophagus," was read by Dr. J. H. Fitzgibbon, in which the various types of esophageal obstructions, their etiology, treatment and ultimate outcome were considered. The paper was illustrated by lantern slides. The discussion was opened by Dr. John Montague.

A case report was read by Dr. Howard, presenting the history of a patient with a tuberculous kidney which had drained spontaneously through the lumbar region, this condition having been mistaken on two previous occasions for a psoas abscess.

## BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

SOME FUNDAMENTAL CONSIDERATIONS IN THE TREATMENT OF EMPYEMA THORACIS. By EVARTS A. GRAHAM, A.B., M.D., Member of Empyema Commission, U. S. Army; Professor of Surgery, Washington University Medical School, etc. This essay was awarded the Samuel D. Gross Prize of the Philadelphia Academy of Surgery in 1920. Cloth. 110 pp. Illustrated. \$2.50. C. V. Mosby Co., St. Louis. 1925.

This little book is of great interest, because it describes much experimental work and is also the result of enormous clinical experience of the empyema commission in the late war. The reviewer had the good fortune to visit a large hospital in Ashville, N. C., devoted wholly to empyema, and under the supervision of the empyema commission. Here Dakin's solution was employed under the able supervision of the noted bacteriologist, the late Dr. E. K. Dunham.

In the earlier part of this monograph Graham shows the falsity of the accepted idea that an open pneumothorax affects only the lung on the side of the pneumothorax. It is proved by many animal experiments that the mediastinum is not at all a rigid partition but there is almost as much interference with the lung on the normal side as with that on the other. Also, if the opening in the chest wall is as large as that of the glottis, practically no air would be sucked into either lung. Early operation on empyema with an open pneumothorax, therefore, greatly increases the mortality because

adding to the difficulty of breathing in pneumonia and empyema.

This was one of the great lessons of the war where the mortality from empyema varied from 30 to 70 per cent, whereas the death rate of patients in the hands of the empyema commission was as low as 4.3 per cent. The reviewer, after observing the work of the empyema commission, had many cases of empyema in the course of 700 cases of pneumonia at Jefferson Barracks, but all were saved by delaying surgery. When frank pus has formed, one has practically an open abscess to deal with, which does not open into the general pleural cavity, the mediastinum is more rigid from inflammation, the patient is in better condition to stand shock, and there is no risk of a general septicemia from the absorption of streptococci into the blood from the fresh wound. The necessity of a small opening in the chest will be made apparent by consideration of the above remarks in respect to the size of the glottis and opening into the chest in open pneumothorax.

After streptococcal pneumonia and empyema about four aspirations were done and operation for empyema was deferred till two or three weeks after the onset of the pneumonia. The remarkable effect of Dakin's solution depends on its antiseptic action and on obliterating the abscess cavity by solution of the fibrous exudate which sometimes comes away in large masses. In early operation on empyema rib resection is avoided and a small incision is made between the ribs. This avoids a large opening and rib osteomyelitis.

Two operative methods in empyema have heretofore been used: (1) To expand the lung by removing the restricting membrane of exudate, and (2) to allow collapse of the chest wall to meet the lung. The first result is secured by Dakin's solution and exercises, as blowing against resistance. The second method should rarely be used, as it lowers the vital capacity so greatly by interference with the proper expansion of the lungs. A diminution of fifty per cent is not unusual and this lessens a person's resistance one-half in lung and heart disease. Most of the cases studied by Graham were due to hemolytic streptococci. It is always, of course, vital to determine the etiologic bacterial cause of empyema, as that due to the pneumococcus is much less fatal. Finally, the author shows the urgent necessity of a high caloric and carbohydrate diet in empyema. The monograph is of inestimable value because it is an epitome of the lessons taught by the great war.

WINSLOW.

OCULAR THERAPEUTICS. A Manual for the Student and the Practitioner, by ERNEST FRANKE, M.D., A. O. Prof. of Ophthalmology and Chief of the Second Eye Clinic at the University of Hamburg. Translated by Clarence Loeb, A.M., M.D., Oculist to the Michael Reese Hospital, Chicago, Ill. Cloth. 183 pp. \$3.50. C. V. Mosby Co., St. Louis, 1925.

A good and complete description of local and general treatment of the eye is given in this book, optical and surgical therapy not being included. Because

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CAPACITY—NINETY BEDS

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many diseases of the eye are only local manifestations of diseases of the whole body, the author devotes nearly half of the book to general treatment. To tuberculosis and syphilis are given separate and exhaustive chapters. Interesting are the tuberculin cures according to the special technic of Ponndorf, which frequently gives excellent results, especially in scrofulous diseases.

In the chapter on protein therapy new synthetic chemical products and their uses are described. Cow's milk, sera, vaccines, etc., are uncertain in their use and doses; they contain, besides an irritative element, albumin and many split-products, which not seldom cause undesired effects. Hence, the many laboratory and chemical experiments to find pure synthetic chemicals as substitutes. One of them, yatren, is lately being much and successfully used. Great surprises may await us in this field.

Many of the remedies mentioned are not available in this country, which may be a blessing. Some of them are already forgotten. Even the ghost of Friedmann's tortoise tuberculin is still fitting around. The physician, who in some troublesome eye diseases finds himself at his wits end, may get new encouragement out of this little treatise.

KLEMPNER.

**DISEASES OF THE NOSE, THROAT AND EAR, MEDICAL AND SURGICAL.** By William Lincoln Ballenger, M. D. formerly instructor of Otolaryngology, Rhinology and Laryngology, University of Illinois School of Medicine, etc. Fifth Edition. Illustrated with 551 Engravings and 32 plates. Cloth. 1080 pp. \$10.50. Lea & Febiger, Philadelphia and New York, 1925.

Revised editions of a medical work after the death of the author are not often successful, but we have a marked exception in the case of this volume, revised several years after the death of the author. The original work was a favorite textbook because of its conciseness and readable style, qualities which are retained in the new edition although much of it has been rewritten. Obsolete matter has been eliminated and new material added. Late pathologic and anatomic findings are incorporated and we find discussion of the surgical treatment of ozena, x-ray therapy in deafness, new conceptions of asthma and hay fever, new data concerning the labyrinth and other advances, concerning which information has been available only in recent periodicals. Practitioners and students will find this a very practical and up to the minute book.

BRUGMAN.

**TEXT BOOK OF ORTHOPEDIC SURGERY FOR STUDENTS OF MEDICINE.** By James Warren Sever, M. D. Assistant Orthopedic Surgeon, Children's Hospital, Boston. Cloth. 353 pp. \$4.50. Illustrated. The Macmillan Co. New York, 1925.

In the preface to the book the author states, "An encyclopedic knowledge is sometimes useful but, unless subjects are presented briefly and didactically, one is more often confused than instructed. It was,

therefore, with the idea of presenting to the medical student orthopedic surgery in simple terms that this book was written." He has closely followed his intentions and the book limits itself to what may be described as "pure gospel." It furnishes the medical student with sound foundations for his knowledge on this special subject. The book is well and profusely illustrated and the roentgenograms of the bones shown are very clear.

The comparative amount of space devoted to anterior poliomyelitis and obstetric paralysis is possibly open to criticism, but the author's original research in the latter subject justifies his enthusiasm and makes an excellent chapter. The subject of painful and irritable backs is well presented and surgeons engaged in treating industrial accidents will find it very useful and enlightening. Although the book is published for the use of students, this chapter alone will make it a very valuable addition to every doctor's library, because, let us hope, we are all after all still students of medicine.

MURRAY.

**THE WRITING OF MEDICAL PAPERS.** By Maude H. Mellish, Editor of the Mayo Clinic Publications. Second Edition, Revised. 12 mo of 168 pages. Philadelphia and London. W. B. Saunders Company, 1925. Cloth, \$1.50 net.

The second edition of this monograph continues the impression, associated with the initial edition, that the average physician, purposing to embark on a medical literary venture, can read it with much profit. The author touches on all the essential facts of the correct writing of a paper. Not only is there a discussion of vocabulary, punctuation, subject matter and construction but advice is given as to how the manuscript should be prepared, the reading of proof and other essential minor details. If one would thoroughly digest the chapter on "don'ts," he would avoid a large group of the most commonly perpetrated errors. The book can be highly commended as being well worth the reading, especially on part of the infrequent writer of medical papers.

**THE MEDICAL RECORD VISITING LIST FOR 1926.** Contents: Calendar, Estimation of Probable Duration of Pregnancy, Approximate Equivalents of Temperature, Weight, Capacity, Measure, etc. Maximum Adult Doses by the Mouth, in Apothecaries' and Decimal Measures. Drops in a Fluid Drachm. Solutions for Subcutaneous Injection. Solutions in Water for Atomization and Inhalation. Miscellaneous Facts. Emergencies. Artificial Respiration. Signs of Death. Hints on the Writing of Wills. Table of Signs. Visiting List with Special Memoranda. Consultation Practice. Obstetric Engagements. Record of Obstetrical Practice. Record of Vaccination. Register of Deaths. Nurses' Addresses. Addresses of Patients and others. Cash Account. For 60 patients a week, \$2.00. The Visiting List is also supplied in 30 patient and 60 patient sizes.

The Dosage Tables, etc., have been carefully revised to conform to the recent revision of the U. S. Pharmacopeia. William Wood & Co., New York.

# NORTHWEST MEDICINE

The Journal of the State Medical Associations of Oregon, Washington, Idaho, Montana  
and Pacific Northwest Medical Association

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No. 12

## ORIGINAL CONTRIBUTIONS

### ACUTE OBSTRUCTION OF THE CORONARY ARTERY\*

JAMES B. HERRICK, M.D.  
CHICAGO, ILL.

The blood vessels of any organ of the body present special problems that depend upon the anatomic peculiarity of the circulatory channels in the organ and the function to which that organ is devoted. The glomerular tuft in the kidney, the alveolar distribution of the capillaries of the lung, the double circulation of the liver may be cited as examples. The heart is no exception. Its blood vessels must nourish the central pump of the entire circulatory system. Failure to do so for even a short period of time means disaster to the entire body. The flow through the coronaries must take place while the organ being supplied with blood is rhythmically and restlessly in active muscular motion, being quiet only a small fraction of every second of time, a motion that must subject these arteries and particularly the inter- and intramuscular branches to severe physical strain. Other features might be mentioned, such as the part played by the vessels of Thebesius, and the question as to the extent to which the heart muscle is nourished

directly from the cavity of the heart itself. We thus see the peculiar problems and the special interest of the problems presented by the coronary arteries in health.

This interest of the problem and its complexity must carry over into a consideration of the coronary arteries in disease. A flaw in their integrity disturbs the proper functioning of the central organ of the entire vascular system; and on the integrity of the heart muscle depends the efficient circulation through these coronary vessels themselves. Vicious-circle-like, impairment of the function of one impairs the the function of the other. Again, damage wrought to the heart through the coronaries cannot, as in the case of many other organs, be made good by temporary, recuperative rest. The leg, ovary, stomach, bowel, kidney, bladder may cease activity for a time and attain complete or partial anatomic or physiologic recovery. Except in a limited sense, there is no rest for the heart in health or in disease. Further, while in time of storm and stress it may be partially aided by other organs, such as lung, peripheral vessels, kidney or nerves, the heart cannot depend on satisfactory vicarious or compensatory changes in a companion organ, as the kidney may do or a parathyroid gland.

The coronary arteries of the heart are subject to the same diseases as are other arteries of the body. It would, however, lead us too far afield today, interesting though it might be, if we were to try to

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consider in one short hour all the diseases to which the coronaries are liable—the changes in acute infections, in syphilis, in intoxications as from lead or gout, the rare tumors, etc. Nor do I think it wise to discuss the very important subject of the chronic inflammatory and degenerative changes that affect these vessels, well worth considering and fascinating as this topic may be. This would lead, as you know, to a discussion of the causes and pathology of arteriosclerosis, hypertension, chronic renal disease, and more especially from the cardiac standpoint to that group, still rather motley in character if considered from the etiologic point of view as well as that of pathologic anatomy, variously designated as chronic myocarditis, myocardial fibrosis, etc. This would entail a discussion—that in the time allotted could only be general—of the clinical manifestations, the variations in size, rhythm and physical signs of the organ; the dyspnea, cyanosis, edema and other signs of failing heart.

The time will be more profitably spent, I am sure, if we give our attention in a more intensive way to a single aspect of coronary disease. I refer to acute obstruction of the coronary with infarction of the heart muscle. One reason I present it to you is that even today it has not the general recognition that it deserves, yet it is a clinical entity almost as distinct and clear cut as cerebral hemorrhage; it is not uncommon; it should be more widely known. It is a condition, therefore, that should interest the general practitioner and specialists as well.

For a long time the conception of coronary obstruction was of a condition that was of interest to the pathologist rather than to the clinician. While here and there some clinical feature was described, the belief was general that the accident meant sudden death; neither the coronary artery nor any large branch could be obstructed without an immediate fatality. The descending branch of the left coronary was spoken of, and with good reason, as the artery of sudden death. Cohnheim in the 80's said that a dog, one of whose coronaries was ligated, died within two minutes. Transferring his experimental conclusions to man, it seemed idle, therefore to try to draw a clinical picture of a condition whose maximum duration was so brief. Some ten years ago I ventured this diagnosis of acute obstruction of the coronary artery in a man who was living several weeks after the symptoms that I regarded as due to coronary obstruction had been noticed. An experienced and wise colleague

said such a diagnosis was all right postmortem but was simply foolish because impossible during life. All this is now changed. Not one but many articles recount the cases with autopsy control. In London the other day Wenckebach gave an illuminating address on angina pectoris and included a clear cut description of coronary obstruction. Dr. Christian writes a few days ago: "It has become an easily recognized disease instead of a postmortem curiosity. Its possibilities of healing in certain patients now are clearly recognized."<sup>1</sup> One may, therefore, speak with more assurance and with a feeling of greater confidence in the correctness of one's statements, when one finds so many observers in so many different localities agreeing in the main features of this clinical condition.

The reason it was not earlier recognized was chiefly because it was regarded as immediately fatal. This was the belief because a large percentage die when the accident occurs. Those who recovered were regarded as having had a severe paroxysm of angina pectoris; or it was perhaps called an acute dilatation of the heart or ptomaine poisoning. Another reason why recovery was regarded as practically impossible was because the coronary artery was looked upon as a terminal or end artery, whose obstruction rendered suddenly anemic and functionless a large area of the heart muscle. Without anastomosing vessels, this area must remain permanently bloodless and functionless, and the heart's contractile power would be so seriously interfered with as to cause death. It may be noted incidentally that ventricular fibrillation was not yet spoken of. Cohnheim, as has already been mentioned, had tied the coronary in dogs and they had all died inside of two minutes. The end artery notion, the experiments on dogs, the many sudden deaths shown by autopsy to be due to coronary obstruction and the failure to diagnose the condition in those who recovered led to this conception—a conception we now know to be wrong.

The coronary arteries are not in the strict sense terminal arteries. There are numerous anastomoses between the branches of the same coronary artery and between the right and left arteries, some of the branches being of a size clearly large enough to permit of important function. This the anatomists have shown through careful dissection, by the injection of one artery from another, by skiagraphs of injected arteries and by direct inspection of hearts

1. Peter Bent Brigham Hospital Eleventh Annual Report, p. 122, 1924.

made translucent by special methods. Such anastomoses are especially reported in the subepicardial tissue. It is recognized, however, that there are individual differences and also that, though the heart may show rich anastomoses, these are not necessarily functional, that is, that an artery which anatomically is not a terminal artery may yet be so in a functional sense.<sup>2</sup>

The experiments of Cohnheim and his numerous predecessors have been repeated with more exact technic and greater care as to artificial respiration, anesthesia and damage to the heart and lungs and the results have been very different from the earlier ones. Many investigators have had animals live hours, days, months and make complete functional recovery. The autopsy when the dog has been killed has shown an occluded artery and a patch of fibrosis in the heart wall which may have yielded in an aneurysmal dilatation. There have even been occasional cases of ligation of the coronary artery in man for the checking of hemorrhage due to wounds, and the patients have lived. Experimentally, then, sudden death, even late death, is not necessarily a consequence of obstruction, even where a large branch such as the descending branch of the left coronary is occluded.

The pathologists had not infrequently reported the finding of obstructed coronaries, the accident evidently one of long standing; the patient had not died immediately. There may have been, presumably had been, symptoms, though they had not been recognized. Clinicians had contributed, however, scattered reports of such cases, usually as rarities, in which suspicious suggestive symptoms had been found on autopsy to have accompanied the obstruction, generally by thrombosis in some large coronary. One finds clear reference to such cases in Osler's "Lectures on Angina Pectoris" in 1910 and Sternberg's monograph on "Partial Aneurysm of the Heart" in the same year. René Marie in 1897 wrote a monograph of 214 pages on "Infarct of the Myocardium and Its Consequences," dwelling largely on historical and pathologic features though citing certain clinical aspects. Yet no comprehensive clinical picture was presented by any of the writers. The condition was largely a curiosity or rarity.

From these facts, therefore, gathered from anatomy, showing that the artery was of such character as to permit of at least partial repair, from exper-

iments showing a not infrequent recovery in dogs whose cardiac circulation closely resembles that in man, from the occasional survival of a man whose coronary has been ligated because of accidental wounds, from the reports of pathologists and from numerous clinical histories, one is forced to conclude that such a nonfatal result is possible and really occurs. *A priori* we might have expected it to occur, assuming the circulation to be as we now know it is, relatively rich in vessels able to step in and assist any effort at a repair of the damage in the area watered by the occluded vessel. We may conclude that, if as a result of sudden occlusion the ventricle be not thrown into fibrillation, a condition generally quickly fatal, if the softened area does not in the next few days rupture, recovery may ensue. The resulting fibrous area in the heart wall that represents the old infarct, the thin scar bulging in aneurysmal style may be functionless as far as the ability to contract is concerned, but if it *holds* and will not leak it does not necessarily lead to death. It permits the undamaged myocardium to perform its function. How nearly perfect is this function in ventricle, septal wall or papillary muscles in the way of contracting, conducting an impulse, or maintaining the reserve power of the heart must and does vary a great deal.

In this paper I shall attempt to present to you the salient features of this condition chiefly from the clinical point of view, the facts presented being the result of a study of the articles written by older writers as well as of the numerous excellent descriptions more recently offered, many of them by American authors.<sup>3</sup> I am able to speak also from a personal experience with a fairly large number of cases, not a few with later autopsy control.

In attempting to present the clinical features of this accident I would make three groups. One must admit that there are two groups in which the clinical picture cannot be accurately drawn. In one group are the cases of sudden death. Some of these (and they might be made a separate or subgroup) are cases in which death is seemingly instantaneous and perhaps painless. Krehl has emphasized the peculiarities of the death of this type, the lack of terminal respiratory agony, no distortion of the features, no muscular spasms. This group will include also those cases in which the attack is anginal, the pain severe and the shock profound, with

2. For many features of anatomic as well as pathologic interest one may consult the articles by Marie, Crainicianu, Galli, Gross, Le Count and Oberhelman.

3. Among the American writers may be mentioned Dock, Osler, Libman, Wearn, Longcope, Pardee, Gordinier, Levine, Tranter, Riesmann, Robinson, Herrmann, Kahn, Blumer, Willius, Barnes, Gorham, Acker, Gold, Werley, Haller, Hardt, Le Count, Hamburger, Fred Smith, Herrick.

death following in a few minutes or a few hours at the most. How many deaths regarded as due to angina pectoris should fall in the category of sudden obstruction of the coronary is uncertain. Only a large and carefully conducted series of observations in the dead-house with minute study of the artery can determine this fact. Personally I am inclined to think the percentage will grow materially, the more thoroughly the study is pushed.

In this connection LeCount's figures are suggestive. Of 175 deaths from heart disease investigated by the coroner's office, 26 had symptoms suggesting angina pectoris. In these 26 cases there was found at autopsy more or less acute obstruction of the coronary circulation (*J. A. M. A.*, April 4, 1918, p. 974). In the second group may be placed the nonfatal cases with mild symptoms, slight anginal attacks, perhaps without the ordinary causes such as walking. Some of the stitch pains in the precordia may well be due to obstruction of small coronary twigs. Such interpretation of these phenomena, while largely a surmise, is based on the fact that other causes for the pains are lacking and that the patchy fibrosis of the myocardium that is later found at autopsy may have originated in a progressive narrowing of the sclerotic vessels, with, from time to time, acute thrombotic occlusion of small branches; and such obstruction in small vessels may well have produced symptoms differing chiefly in degree from those caused by obstruction of the larger arteries of the heart. Since 1912, when I began looking for these cases of coronary obstruction clinically, I have seen several patients in whom I have felt that such obstruction of small vessels with mild symptoms had occurred. In some instances two or three attacks of mild character differing from the more familiar effort paroxysm of angina pectoris have been followed at some later period by severe and unmistakable symptoms of occlusion of a vessel of larger size. A thrombus in a small branch of the coronary artery may produce mild symptoms just as a clot in a small twig of the cerebral vessels may cause transient and comparatively trifling symptoms very different from the hemiplegia, or possibly sudden death that follows the embolic or thrombotic plugging of a vessel more important or of larger size. There are, therefore, two groups in which clinical symptoms are difficult to describe or recognize, the cases of instantaneous or sudden death and the milder cases with slight and often uncomplained of symptoms.

In the third group are the cases in which the

symptoms are severe or distinctive enough to enable them to be recognized as cardiac and in which the accident, while frequently fatal, is not immediately and perhaps not necessarily so, for recovery may follow. It is to the clinical features of this group that I wish to direct attention.

There is no fixed clinical picture of sudden obstruction of a coronary artery any more than there is of an obstruction of a cerebral artery. The variations must depend in a measure on the suddenness with which the occlusion occurs, its measure of completeness, the size and location of the artery (some parts of the heart are less vital, more indifferent than others), and the degree to which collateral circulation may work to repair the mischief wrought in the area robbed of its blood supply. The extent of the damaged area and the amount of function lost may be influenced also by the extent to which compensatory changes in other vessels may have been going on. For instance, in a heart in which a sclerotic process has been for long present in one coronary artery, the lumen of which has been gradually becoming narrower, the other vessels because of doing more work may have increased in size. The final event in the process, the formation of a thrombus and the occlusion of the artery especially diseased, finds the tissues in a sense prepared; the insult is not as overwhelming as it might otherwise have been. It is probably true that the most serious results have been in those whose vessels have shown comparatively little chronic change, where no previous compensatory process has taken place and where the blow falls on a myocardium unprepared for any such attack. This compensatory enlargement of the unobstructed vessel in cases in which the other vessel is extensively narrowed has attracted my attention for a long time as a matter of theory and of postmortem observation.<sup>5</sup> It is emphasized in a recent article by Oberhelman and LeCount.

It may be pertinent to pause here for a moment to comment on the fact noted by many writers and particularly by those who oppose the coronary artery theory of angina pectoris, that there is often a strange disparity between the paucity of clinical symptoms pointing to the heart and the rich finding of changes, especially sclerotic changes, in the coronary arteries. One often marvels at the absence of symptoms of cardiac weakness, as one sees at autopsy the narrowed vessels and the extensive

<sup>5</sup> Cf. discussion in *Proceedings of Chicago Institute of Medicine*, Vol. I.

patchy fibrosis of the myocardium. It is, perhaps, no more a reason for surprise than to note similar extensive changes in the cerebral or renal vessels in one who during life had shown few symptoms attracting attention to the brain or kidney. One must be impressed by the wide margin of safety provided by nature, a fact well brought out by Meltzer several years ago. The opposite is also true. A heart clearly incompetent, in which we suspected marked coronary changes with secondary myocardial degeneration, may be found anatomically remarkably normal in appearance.

More study along these lines is desirable in order that we may know accurately the frequency of coronary disease and its association with myocardial lesions. Kretz<sup>6</sup> has lately emphasized these features and is quite skeptical of our ability to diagnose *intra vitam* the state of the coronary artery or the heart muscle. Furthermore, he thinks the function of the coronary artery has been overestimated. He calls attention to the probability that the heart muscle, more than is generally supposed, depends upon imbibition directly from the heart cavity. How, otherwise, he asks, can one explain the many cases of extensive coronary obstruction with good function of the heart and especially those instances, rare to be sure, in which a patient has survived the obstruction at their mouths of both coronaries. Without necessarily accepting Kretz's relegation of the coronary arteries to a position of secondary importance, we may say that such investigations should be encouraged. They are illuminating and much needed because there are still many obscurities concerning the coronary arteries. Only in this way can the true facts concerning the coronary be obtained—the frequency and nature of the acute processes, syphilis, arteriosclerosis, primary and secondary myocardial changes, correlation with disturbance of function, how recognized clinically, how best treated.

As might be expected, the condition is met with in those whose age carries with it the greater likelihood of vascular change. It is rare in children or young adults. It is commoner after forty and is oftener met with in men than in women as is angina pectoris in general. A large proportion of patients, though not all by any means, have previously suffered from typical angina—paroxysmal attacks of substernal constricting pain on effort, especially walking after a heavy meal, against a head wind, etc., a pain often radiating to the arm, bringing

the patient to a stop. In other instances (and strangely enough this was true of the first three cases that I saw and in which I had the opportunity of making a postmortem examination) there may have been no previous angina of effort, there may be found no aortic sclerosis and only moderate coronary change.

The commonest symptom is pain generally coming on suddenly. Cases are recorded in which pain has been absent. That obstruction coming on gradually may be painless is reasonably certain. That acute obstruction in small vessels may be relatively painless is probable. Usually, however, pain is the outstanding initial symptom, and it is severe. If the patient has suffered previously from angina, he may describe it as the severest attack he ever had. And it lasts. It does not pass off in a few minutes as in the ordinary anginal attack, if the patient stands or sits still or takes nitroglycerin. Morphine is often required and a second or third dose. In some cases a status anginosus develops, one painful seizure succeeding another with great rapidity, the slightest movement seeming to be sufficient to provoke suffering. None of the patients in whom I have seen this anginose state after coronary obstruction has recovered.

In other instances, however, after the initial severe and prolonged painful seizure the suffering lessens, pain vanishes and a condition of euphoria is present. And at times, remarkable to relate, the patient who formerly had anginal attacks is able to walk or otherwise exert himself without bringing on these paroxysms. Sternberg, in his article on Partial Cardiac Aneurysm, refers to this. Musser in 1897 spoke of the disappearance of pain when the heart dilated. Wenckebach and others refer to the fact that in angina, when heart failure sets in with fibrillation of the auricle, pain often ceases and dyspnea may begin. It is too much to claim without further proof that in all these cases there has been an obstruction of a coronary artery. But in many such obstruction has taken place and as a result the artery and portion of musculature of the heart wall have become functionless, and with this inactivity in some way there is lacking the cause of the pain on effort. Is this an argument against the aortic theory of anginal pain? May not one say that the occurrence of pain often of typical anginal character when a coronary is suddenly plugged, and the cessation of the old paroxysmal pain when this coronary artery and the musculature supplied by it are thrown out of commission indicate that

6. Kretz, Johannes: Ueber Veränderungen an den Koronararterien, etc. Wien. Arch. f. In. Med., IX, Hft. 3, Mar. 30, 1925, p. 419

the artery or the muscle or both have been the source of the pain in at least some instances.

Not all of the patients, however, describe the pain as in the typical midsternal region from which there is brachial radiation. In many instances the pain is referred to the lower sternal or epigastric region and it may not radiate to the arm or neck. One is tempted to surmise that in these cases there is a lesion near the apex of the heart, produced by a plugging of the left descending branch (this has been noted in many of these cases as the site of the thrombosis), while in others with a higher location of pain and a radiation to the arm the lesion may be higher up in the descending branch or in the circumflex artery. But this is speculation. There must be more accurate study of the exact location of the pain, the skin tenderness, the area of radiation, the immediate and remoter functional effects, with careful autopsy control before any conclusions can be drawn regarding the location of the lesion and the extent of myocardial damage. Such cardiac localization, however, may not in the future be impossible, if careful study be given to the clinical features, including electrocardiographic investigation and postmortem control.

Serving to distinguish this pain from the ordinary anginal seizure is the fact that the usual provocation causes are frequently lacking—effort, walking against a head wind, a full meal, mental excitement. The pain may occur while the patient is sitting still, or while he is in bed. The French (e.g., Lutembacher) have recently described a "decubital angina," an angina that comes on while the patient is lying down. The description given leads one to think that the authors might broaden their statement and say that not some of these are instances of coronary obstruction but that probably all are of that character. The facts regarding pain, therefore, that are significant are that it may occur without the ordinary provocative cause, it is unusually severe, its duration is prolonged, and often it is in the lower sternal rather than in the midsternal region.

The sharp insult to the myocardium, so much of which is rendered suddenly useless, will explain several features relating to the pulse, the blood pressure and the heart tones. As already stated, these results must depend upon the size and location of the vessel occluded, the state of preparedness of the heart as regards vascular changes already present and the degree of functioning anastomosis. The results must also to a large extent be determined by

whether the thrombus continues to increase proximally, thus adding to the area of muscle involved in the process of infarction. These facts will serve to explain the extreme variability in the physical findings in the heart and vessel in different individuals who survive this accident for any great length of time.

In general, there is a sudden drop in blood pressure. Many of the victims are individuals whose pressure has previously been known to have been high. The drop in blood pressure, therefore, is significant, as in the classic paroxysmal angina the pressure is apt to rise rather than fall. Previously normal pressures may go down to 100 mm. Hg. or less. There may be remarkable daily variations in pressure following the accident.

The heart tones are often faint, at times startlingly faint—the muscular element has largely gone out of them. The apex impulse may be imperceptible. The pulse is rapid, feeble and may manifest various forms of irregularity, extrasystoles being particularly common. At times there is auricular fibrillation. Or there may be short paroxysms of this form of irregularity or short runs of tachycardia, sometimes of ventricular origin. In a few cases I have seen a pulse that was slow, fairly regular and that was remarkably full and strong, considering serious damage done to the heart muscle. Heart block has been noted.

These changes in the rate and quality of the pulse, the feebleness of the heart beat, the faintness of the tones and the drop in blood pressure should all be viewed as pointing suspiciously toward an obstructive coronary lesion, for they are distinctly unusual after the ordinary attack of angina pectoris.

Shock varying in degree from that which may be described as slight to that which is severe and bordering on collapse is commonly manifest. The countenance may be ashy in color, the face and hands clammy. There is manifested weakness in the patient's movements and his feeble voice. Even before feeling the small, rapid, irregular pulse, one realizes that the patient has been hard hit.

Some do not rally. They are confined to bed, asthenia is profound, they must be helped in their every movement, and suffer from recurring anginal seizures. The pulse remains weak, varies in rhythm. After a few or many hours they gradually or more frequently suddenly succumb, the ventricle presumably going into fibrillation, or more rarely rupturing.

In other instances after the initial pain and shock

there is a remarkable recovery, a pseudorecovery it might be termed. Not only does the pain cease but the patient feels fairly strong and may be anxious to get out of bed and to move about, and he may be able to do this.

The breathing is often strangely easy and free. Or there may be dyspnea and cyanosis. Occasionally there is Cheyne-Stokes respiration. Rales of various kinds may be heard on auscultation. Quite marked congestive phenomena are sometimes present, notably at the bases of the lungs behind. True bronchopneumonic lesions may develop. An acute emphysema is sometimes met with. In the first case of coronary obstruction that I saw, or rather saw and recognized as such, the barrel-like note over the chest from this emphysema impressed Dr. J. B. Murphy, who was called in consultation, more than any other feature, raising the question of pneumothorax, diaphragmatic hernia, etc. While I have met with it in a few other cases, I have never seen it as pronounced as in this instance.

If the area of infarction reaches to the epicardium, the covering of the heart is roughened and there is a little fibrinous deposit on the heart with some turbid serous fluid in the pericardium. This "aseptic pericarditis," the pericarditis epistenokardica of Kernig, may at times be suspected from the development of a new, generally slight, secondary pain with pericarditic features and from the detection of a typical to and fro pericarditic friction rub. In my experience the friction is not as often heard as one might expect from reading the reports of others.

In the earlier papers that I wrote concerning cases of coronary obstruction<sup>7</sup> I failed to stress as should be done, the not infrequent occurrence of fever. Some cases are afebrile; in others a slight rise only is noted—to 99° or 100°. But in other instances (and this point has been justly emphasized by others) there may be a frank fever, the temperature for a day or two going to 101° or 102° or even higher. In some instances bronchopneumonic inflammation may explain this fever, but not always. I am inclined to agree with Wearn, Hanser and others who make of it a toxic fever, due to the absorption of material from the destroyed muscle of the heart. Sternberg refers the fever largely to the pericarditis, but this latter is not microbic and is in reality but a part of the necrotic process present in the myocardium. I believe it will be found true

that there may be fever when the infarcted area is fairly extensive in the subendocardial region but fails to reach the pericardium (and this is not infrequently the case), thus eliminating the latter structure as the cause of the rise in temperature. The polymorphonuclear leucocytes are often increased.

While I would not emphasize the presence of fever and leucocytosis as strongly as has been done by some in the diagnosis of acute coronary obstruction, these features when present are of great value, for uncomplicated paroxysmal angina pectoris is fever-free.

The mental state of these patients has varied a great deal. Many have been clear of mind, calm, yes marvelously calm, considering the agony of suffering through which they have just passed. Others, especially those in whom the pain recurs at short intervals, are nervous, apprehensive and bear their pain only with much complaint. In other instances restlessness and sleeplessness merge into a mild delirium. This latter may be explained as due to several causes—disturbed cerebral circulation, faulty elimination, toxemia from absorption of products of myocardial necrosis, possible bronchopneumonic or nephritic complications. The contrast between the two types is strikingly illustrated by the behavior of two individuals, each of whom I saw several times. The one, a man of about fifty with no old cardiovascular changes, was in bed for months after his typical seizure with feeble pulse, low blood pressure, extreme and treacherous variations in the quality and regularity of his heart's action, yet throughout all the many weeks clear in mind, calm, philosophical. He is now working, more than two years after leaving the hospital. The other, a man over sixty with previous high blood pressure, sclerotic vessels and several preceding attacks of angina, had ups and downs of fever, sharp variations in blood pressure and pulse rate, albuminuria, dyspnea with many coarse rales. He was restless, flighty, often sleepless, finally delirious and ultimately stuporous, dying after about eight weeks. Autopsy showed the coronary lesion.

The fate of these patients after the coronary accident is by no means uniform. In some, as stated, a seeming improvement is rudely terminated by a sudden death due to fibrillation of the ventricle. In some a status anginosus develops, the patient is confined to his bed or chair and dies, usually suddenly at the last, after hours or days of intense suffering. One such patient had what I took to

7. Herrick, James B.: Clinical Features of Sudden Obstruction of the Coronary Arteries. *Jour. Amer. Med. Assn.*, Dec. 7, 1912, Vol. LIX, pp. 2015-2020.

Herrick, James B.: Thrombosis of the Coronary Arteries. *Ibid.* Feb. 8, 1919, Vol. 72, pp. 387-390.

be secondary thrombi (or emboli?) in the arteries of one leg with intense pain and loss of pulse.

In others the heart dilates, as manifested by the increased percussion outlines, the location of the maximal impulse and the development of a systolic murmur over the mitral area. With this dilatation other signs of cardiac weakness appear, such as cyanosis, rales, enlargement and tenderness of the liver, edema of the ankles, albuminuria. Libman refers to an observation of Sibson, the earthy, leaden color of the victim of an old heart infarct. A death as in ordinary heart failure is the rule in these instances. At times, however, there is a relative recovery, so that the patient is again seemingly well though conscious of some dyspnea on exertion, palpitation, cardiac irregularity or precordial distress. This recovery, which may be complete or only partial, may take place within a few days, the area of infarction being presumably small, or it may occur only after weeks of prolonged rest, use of digitalis, proper diet and very gradual resumption of physical activity. In some cases, in which partial or seemingly complete recovery has ensued, there may be a recurrence of the thrombic process. This may be a growth of the thrombus proximally or it may be that a new vessel is affected. There may be in such a case a sudden death or a repetition of the phenomena of the original accident.

There should not be omitted reference to the fact that the electrocardiograph may, if it is available, be of help in recognizing these cases in their earlier as well as later stages. The experiments of Fred Smith on dogs, showing fairly constant marked variations in the ventricular curves immediately after ligation of the branches of the coronary artery, have been confirmed by others in dogs and in a few instances in man. The later changes, met with several hours, days or weeks after, the negative T-waves in perhaps two leads, the gradual return toward normal or the isoelectric line; in bad cases the low voltage curves of decreased amplitude and broad QRS have been seen by many others. How constant these changes are, how nearly they will permit of interpretation as to extent and location of lesion in the heart must be determined, if it can be determined, by further study. Pardee's work along this line is especially suggestive, as is that of Kahn, Fred Smith, Hamburger, Willius and others.

Emphasis ought to be laid on the resemblance of some of these cases to surgical accidents. The sudden onset with pain over the lower sternal and

epigastric region, the nausea and vomiting, the tympany, the feeble pulse, ashy color, cold sweat and other signs of collapse may make one think of such conditions as gallbladder disease, acute pancreatitis, perforation of gastric or duodenal ulcer, hemorrhage into the adrenal capsule, etc. The dyspnea, hyperresonant thorax, obscured heart tones, may suggest pneumothorax or diaphragmatic hernia. At times pneumonia has been suspected. Details as to differential diagnosis need not be given.

#### TREATMENT

Treatment will be directed toward conserving the heart's strength in every way possible and in prolonging the time of rest until danger from rupture of the heart, acute dilatation, etc. seems well over. Not a few errors have undoubtedly been made in regarding some of these cases as simply gastric upsets and permitting the patient to begin to move about too soon.

Rest in bed should be strictly enforced. The patient should have his choice as to position in bed, sitting up or lying down. Exceptionally he may have to be allowed to spend his days and nights in the chair. Diet should be light and food producing gas should be avoided. Enemata or cathartics should be given to induce easy stools and to avoid straining.

Morphin may be necessary for the pain. At times this has to be repeated and in fairly large doses. Heat to the chest or sinapism are advised by some. Their value is doubtful.

With the feeble, often irregular, heart digitalis should be given. So far as I know, no case of rupture of the heart or other untoward accident due to the use of this drug in this condition has been reported. It strengthens the heart action and presumably improves coronary circulation. And it is largely on the establishment of an efficient collateral circulation that hope of recovery rests. Stimulants, such as camphorated oil, caffeine or strychnin, also have a place and should be employed when heart failure seems threatening.

I have touched only the more important aspects of this condition which we should regard, as it seems to me, as a clinical entity to be separated from the ordinary angina of effort, though it may not be out of place for descriptive purposes to put it under that head though in a special group. Admitting the difficulty at times of distinguishing it from typical angina—or even the impossibility—one must insist that, if the characteristic features are present, confusion ought not to be for long. The frequent lack of the provocative effort, the severity

of the pain, its long duration, its tendency to be referred to the lower sternum, the evident shock, the weak pulse and heart beat, the feeble heart tones; the later pericardial friction, fever, leucocytosis and evidence of impaired muscular power of the heart with possible cessation of pain on effort—all this is so different from what happens in ordinary angina as to enable one to exclude it with reasonable certainty. The history and the careful examination will eliminate pneumonia, pleurisy, crises of tabes, etc. And if the possibility of this accident is thought of, there will be less difficulty in ruling out lesions in the gallbladder, pancreatitis, perforating ulcer; and the newspapers will have fewer reports of prominent men prostrated by or succumbing to "acute indigestion" or "ptomaine poisoning."

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### CARDIAC INFARCTION, AN EASILY DIAGNOSABLE CONDITION\*

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When I ended my medical school course, now just twenty-five years ago, cardiac infarction had been shown to me in the postmortem room, but I can recall no reference to it as a condition to be recognized during life. My teachers of that day seemed unable to make that diagnosis in the clinic. Today I find that the fourth year medical students in my wards at the Peter Bent Brigham Hospital consider it in rendering a diagnosis on patients assigned to them for history and physical examination, and adopt or eliminate it with a very considerable degree of accuracy. In other words, the students of today diagnose with much accuracy a condition that was hardly known to the medical students of twenty-five years ago.

What has caused this change? It has come in the main as the result of the careful clinical study of patients by observers willing to take the time to record a thorough history and physical examination and then thoughtfully to consider these data in relation to the anatomic conditions found at the postmortem examination. No special, intricate, new methods of observation have played any essential part in the recognition of this clinical entity, though the electrocardiogram in some patients yields data helpful in making the diagnosis.

It seems to me worth while to keep this in mind in

a day and time, when chemical methods tend to overshadow the importance of pathologic studies and considerations of function may turn thought away from those of structure. Notwithstanding the developments in chemistry and physiology, pathologic anatomy has lost none of its importance in the training of medical students and the progressive education of practicing physicians. The habit of careful clinical study of your patients with a checking up of clinical data by postmortem examination remains the greatest school of postgraduate medical study and it is most unfortunate that we, as physicians, have allowed ourselves to fail to get the help that would come from frequent postmortem examinations on the patients that we have studied during life.

To my mind it is highly discreditable to American medicine that we tolerate so low a percentage of postmortem examinations in our hospitals and have almost entirely given them up in private practice, thereby losing a most valuable opportunity to advance our knowledge of medicine. We have found at the Peter Bent Brigham Hospital that effort on the part of the staff will yield an autopsy percentage increasing in ratio to the intelligence of the clientele, which means that it is easier to secure permission for autopsies on private patients than on public ward ones. Patients with imperfect knowledge of English, from lack of understanding, swell the number of refusals, while Jewish patients make the largest percentage of those who decline to permit autopsies, basing it on a claim of forbidding religious tenets, a claim that the better educated rabbis do not support. Jewish physicians, to my mind, have been particularly remiss in not urging autopsies on their clientele, correcting this claim of a forbidding tenet in the Jewish belief. An active propaganda by them in favor of postmortem examinations would do much to increase the frequency of autopsies, especially in certain sections of this country. However, by no means all blame should be placed on the Jews; physicians of other religious persuasions are culpably negligent in seeking autopsy permits on their patients. All of this is somewhat of a digression from my main topic, precipitated, however, by the importance that pathologic-anatomic study has had in developing our ability to diagnose cardiac infarction as a clinical entity.

Though, as already pointed out, in my own student days little was heard of cardiac infarction as a clinical entity, yet to my old teacher, William Osler, should be given much of the credit for the correla-

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tion of the clinical and pathologic findings in this condition, his publication coming some ten years after my graduation. Sir Clifford Allbutt, too, recognized and described the condition. George Dock and James Herrick, of our present group of clinicians, added much to our knowledge of the clinical aspects of cardiac infarction, especially the recognition of the form that recovers from the attack, for it is by no means a fatal disease. The clinical studies of these men have been rounded out by the experimental work on animals of Smith and others, and the electrocardiographic studies on both animals and man made by Smith and numerous electrocardiographers. Today, as I am here emphasizing, as a result of the clinical observations of these men, especially of Osler, Dock and Herrick, cardiac infarction stands out as a clean-cut clinical entity, easy of recognition by any practicing physician who knows the symptoms and usual findings. Simple bed-side methods of examination suffice to make the diagnosis in most cases, so there is no reason why each and every one of you should not diagnose it correctly in your own patients.

Why, you may ask, is it important correctly to diagnose this condition? In the first place, not at all infrequently the unrecognized case is submitted to a laparotomy in the belief that the pain in these patients, referred to the abdomen, originates there from some lesion of the abdominal organs capable of cure by surgery. Symptoms are fulminating and alarming; emergency measures are inaugurated by the surgeon without thoughtful consideration of symptoms and careful study of the patient. The issue is a fatality. Too often there is no autopsy or only an examination of the abdomen through the operation wound. The surgeon learns nothing from his experiences; his mistake remains unrecognized and with a similar situation in another patient he probably repeats his procedure with like result.

In the second place, a differentiation from angina pectoris is not made. Perhaps cervical sympathectomy is advised. Of course in cardiac infarction, it does no good and may precipitate a fatal outcome. The reports of cervical sympathectomy for angina pectoris already contain some cases, unsuccessful ones as far as surgical therapy is concerned, which would seem to have been patients with cardiac infarction. Cervical sympathectomy is contraindicated in cardiac infarction and so it must be recognized in the satisfactory selection of patients suitable for cervical sympathectomy.

In the third place, diagnosis of the condition is important in treatment. The chances of having a functionally efficient heart following a recoverable infarction of the heart muscle depends in very large measure on how the patient is treated immediately after the lesion develops and, perhaps of greater importance, how the regime of convalescence is planned. Recognizing what has happened to the heart muscle is the most significant step in planning the treatment.

What are the significant findings in cardiac infarction? First, as to past history, many patients give a story of preceding precordial distress, ranging from very slight transitory discomfort, extremely often interpreted by the patient and physician as indigestion, to definite attacks of angina. The various forms of preceding distress have in common abrupt onset, short duration, usual association with exertion, emotion or digestive activity, and location beneath the upper end of the sternum with or without radiation to the arm, ordinarily to the left arm. In another smaller group the discomfort, otherwise the same, is localized in the epigastrium. A very considerable group of patients have experienced no preceding distress. With extremely rare exceptions the patient is past 40, with a curve of incidence rising sharply to its maximum in the 50 to 60 decade and then gradually falling. The youngest in our series was 31 but this was a clinical diagnosis in a patient who recovered and so subject to error of diagnosis. The youngest patient with autopsy confirmation was 42. By decades patients with the diagnosis of cardiac infarction range in our series as follows:

30-39 years of age .....	5 cases
40-49 years of age .....	11 cases
50-59 years of age .....	16 cases
60-69 years of age .....	28 cases
70-79* years of age .....	11 cases

More often than otherwise the patients have had no or very slight evidence of cardiac insufficiency. Very few have evidences of valvular lesion.

Most important in the history is the description of the symptoms associated with the occurrence of the infarction. There are two groups of patients, a large group in which pain predominates over all other symptoms and a small group without pain, having collapse, a sense of impending dissolution and usually dyspnea as the chief symptoms.

The group with pain is more easily diagnosed because the pain is of such a severe, persisting type and at once recognized by the patient as something

\* The oldest in our series was actually 76; of this age there were two patients.

entirely different from any pain of his past experiences, even though he has had typical attacks of anginal pain. This pain most often is located behind the sternum, especially behind its upper portion. At times it is entirely below the diaphragm in location. It is almost always a deep seated pain. Frequently it radiates, most often down the left arm, next along the left side of the neck. It persists; its duration varies but as a rule it is measured by hours, though it may fluctuate in intensity. The patient speedily recognizes that nothing, that he can do, relieves the pain; hence there is no characteristic attitude or position assumed by him. In some swallowing, in others any exertion, aggravates the pain but at times eating or moving about seem in no wise to influence it. To see the patient during an attack removes all doubt as to the genuineness of the pain complained of. His face shows distress, anguish, apprehension; the skin is bathed in cold sweat; the color is usually pale, or ashen gray, while cyanosis is uncommon. Occasionally the skin shows a red flushing. It is obvious that the patient is suffering greatly and that his condition is serious.

Patients describe their pain variously. It is worth while quoting some of the descriptions from the records, as given by our patients.

"A agonizing substernal pain which lasted for forty-eight hours, alternating in intensity from real agony, during which the patient says he did not care whether he lived or died, to a dull aching pain. With each inspiration the intensity of the pain was tremendously increased, so much so that the patient contented himself with rapid, shallow breathing. There was no radiation of the pain."

"Severe pain awakened the patient at 4 a.m. This pain was in the left elbow, spread to the hand and shoulder, then over the precordium and then through to between the scapulæ behind. The pain was steady, sharp and did not move from place to place but occurred at the same time in all places named. She suffered much and had to sit up and fight for her breath."

"While sitting in a chair at the table the patient was suddenly seized with severe excruciating pain along the lower left costal border at the anterior axillary line. The pain was very severe; the patient thought that he was going to die. He had a choking sensation and much difficulty in getting his breath. The patient said he felt as though someone was sitting on his chest. The spot was tender and continued to ache for about three hours."

"When on a train, while quietly reading a paper after an ordinary day of no unusual excitement, the patient was suddenly seized with a terrific pain, sharp and knife-like, over the heart. Later it became a gripping ache, spreading over the whole chest, radiating to the left shoulder and down the left arm to the fingers and down the right arm to the elbow. It continued unabated for five hours and it was so severe that the patient thought he was going to die and really wanted to die."

"While standing in front of the fire station one evening, the patient, a fireman, was suddenly seized with a terrific pain across the front of the chest and in both shoulders, in front and in back. The pain was described by the patient as follows: 'It was like you were in a vise and someone was squeezing it. It was so severe as to bring tears to the eyes.' He had a choking sensation with acute shortness of breath, his breath coming in gasps."

"At noontime the patient was suddenly taken with a terrific attack of pain that gripped his chest and he broke out into cold perspiration and became prostrated."

"After an unusual amount of exertion the patient had a sudden attack of stifling pain in his chest, at which time it was very difficult for him to breathe. The pain was so severe that he had to lie down on the floor of his office. He sweated profusely and had marked dyspnea."

Gastric symptoms are very commonly seen, such as loss of appetite, nausea, vomiting. Patients frequently describe their condition as resembling some previous attack of indigestion, though every feature is very much more intense than ever noted before. If one goes carefully into the past history of patients, one so frequently gets a history of what the patient calls infrequent attacks of indigestion without any recognized precipitating cause that one is led to think that these so-called indigestion attacks are really occasioned by slighter vascular disturbances in the myocardium. The phase of the symptomatology of cardiac infarction regarded by the patient as evidence of indigestion perhaps explains why our daily newspapers with so great frequency attribute the death of notables to "acute indigestion," a condition which, as a cause of death, is in all probability actually limited to a very few examples of poisoning, including possibly a rare case of food poisoning. I feel very sure that a postmortem examination of many of these notables would reveal cardiac infarction. Certainly most of them fall in the age group of most frequent incidence of cardiac

infarction, and strange indeed would it be for actual acute fatal indigestion to spare those under forty years of age, while being frequent in those over forty, as it most certainly does in our newspaper reports. I often wonder whether the physicians of the country really make the diagnosis "fatal acute indigestion," or is it considered a blot on the family tree to die of cardiac infarction or apoplexy or other probable cause of death in these cases of "acute indigestion"? After all, isn't the connotation of death from acute indigestion with its implication of gluttony, riotous living, etc., a worse stigma? I hardly think the diagnosis originates very often with the physician in charge.

Dyspnea is a prominent symptom in nearly every patient with cardiac infarction. A prominent characteristic of it is the disproportion so often noted between the degree of dyspnea and demonstrable lesions of heart and lungs. I have seen a patient who, while lying perfectly quiet in bed, would show but a very slight increase in respiratory rate and yet the effort of changing position in the bed would cause her to gasp for breath. This patient showed but trivial physical signs of cardiac or pulmonary lesion. She was one of our patients who had had practically no pain and the diagnosis of cardiac infarction, correct as confirmed at autopsy, was based on this disproportion between dyspnea and physical signs of cardiorespiratory lesion.

A number of the patients show a dyspnea characterized by rapid, deep breathing, in a way suggestive of the air hunger of acidosis, but in rate more rapid and so like the dyspnea often seen in pulmonary embolism. Though dyspneic, few patients are orthopneic and, as already mentioned, cyanosis is not prominent and may be entirely absent. In these respects they appear strikingly different from patients with the usual forms of cardiac insufficiency.

Of physical signs perhaps the more constant and important one is evidence of a weak cardiac action with not infrequent arrhythmia. The heart usually is moderately enlarged, but this scarcely helps in diagnosis. Murmurs are of no significance; systolic apex murmurs are often heard. Pericardial friction sound, unfortunately rarely present, when it does occur, is of great aid in diagnosis along with the other features. Peripheral arteries of course show some evidences of sclerosis but often it is scarcely disproportionate to the age of the patient. Most surprising it is at times to find almost no signs of arteriosclerosis, which shows how little idea our

examination of accessible arteries may give of the condition of those supplying important or vital organs. Blood pressure is practically always lowered for some time after the attack and this is a helpful sign in diagnosis, and its rise toward normal is of good prognostic omen.

Crackling rales at the base of the lungs are nearly always present and usually persist except in recovering cases, and in these they may be heard for a long time. Often they are numerous and widely scattered in the lungs, causing the picture of acute pulmonary edema. These rales, along with evidences of weak heart action, are two strong links in the diagnosis, when other physical signs in heart and lung are negligible.

The abdomen may show distension. The liver often is tender and slightly enlarged. There may be slight muscle spasm in epigastrium or right hypochondrium. Too little consideration given to history and to slight cardiac and pulmonary signs, as just described under these headings, leads to the erroneous diagnosis of some acute abdominal condition with subsequent negative exploration by a surgeon.

Soon after the infarction occurs slight fever ( $100^{\circ}$ - $102^{\circ}$ ) and slight leucocytosis (10,000-15,000, occasionally 20,000) are almost invariably found. If this is not kept in mind, the fever and leucocytosis may mislead the physician into an erroneous diagnosis of some infectious process with abdominal pain, fever and leucocytosis; an acute inflammatory lesion within the abdomen is simulated and hence the wrong diagnosis and useless operation may follow.

Arrhythmia has been referred to already as being present in a majority of the patients. The type of arrhythmia is various but no form of arrhythmia is in any way characteristic or pathognomonic of cardiac infarction. In many patients the electrocardiogram does show changes in the form of the ventricular complexes, which are almost pathognomonic of the condition and when available electrocardiograms are of much aid in the diagnosis. However, it is to be remembered that the electrocardiogram may be entirely normal in patients with cardiac infarction and hence normal electrocardiographic findings by no means justify discarding the diagnosis of cardiac infarction, when the history and other findings point to it. As already emphasized, the correct diagnosis usually can and should be made without the aid of the electrocardiogram. Consequently I am not going to burden this audience of clinicians

with any detailed description of electrocardiographic findings in cases of cardiac infarction. I would add, too, by way of advice, in case the obtaining of an electrocardiogram involves transportation of the patient, postpone it until his condition has greatly improved, for rest is more important to the patient than an electrocardiogram. A live patient with a probable diagnosis of cardiac infarction is by far preferable to a dead one, definitely diagnosed by finding a typical electrocardiogram, and moving the patient may make the difference between recovery and death.

Treatment, in essential, consists in easing the terrible pain and protecting the heart from the effects of strain. For pain there is nothing so effective as morphia given promptly and repeatedly until one gets its full effects. With severe pain give  $\frac{1}{2}$  grain (30 mg.) at once and repeat in  $\frac{1}{4}$  grain (15 mg.) doses until pain is eased. Nitroglycerin is of no effect on this pain and with the lowered blood pressure is contraindicated. As to the heart, remember that part of the heart muscle has been cut off from its circulation and will die. What remains in good nutrition must carry on heart work. So reduce to a minimum all physical exertion of any sort. Absolute rest in reclining posture is essential. In recovering cases my rule has been six weeks completely in bed and then a very gradual return to physical exertion. The blood pressure level is a very good guide; so long as it remains at a lowered level, great caution in allowing bodily exertion is indicated.

How about cardiac drugs? My judgment is against the use of digitalis except in patients with a preceding cardiac insufficiency, and unless definite signs of decompensation are in evidence, during the period of recovery. I have carried some very desperate cases through to complete convalescence without any digitalis. However, this is a matter on which opinion differs and others recommend the use of digitalis. With failing pulse and evidences of cardiac collapse, caffeine, in doses of 5 to 10 grains (0.3-0.6 gm.), intravenously or intramuscularly has seemed to me to be by far the most effective drug. This should be repeated as indicated by the evidences of feeble pulse and its response to the drug. In the presence of very grave circulatory failure or cessation of pulse beats epinephrin administered intravenously and intracardiacly is indicated and may tide over the crisis. The dose should be  $\frac{1}{4}$  of 1 c.c. of 1:1000 solution. In my opinion, unusual clinical acumen is required in these cases to determine when and how much cardiac stim-

ulation is needed. My feeling is that more often too much and too frequent dosage with digitalis, caffeine, epinephrin, etc. is employed and that on the whole these patients do best when treated with great conservatism so far as so-called cardiocirculatory stimulants are concerned. Some will die, whatever you do, because the heart is mortally wounded with the first block that occurs in the coronary vessels; others have but a small area of muscle involved and will almost surely recover. Between these extremes lies a group, in which much depends on the clinical judgment of the physician in charge, who may err either on the side of doing too much or too little or who may hit the happy middle course of just the proper therapeutics.

Is cardiac infarction a condition of frequent enough occurrence to be of importance to the practicing physician? I think it is. I have had on my service at the Peter Bent Brigham Hospital in a little less than ten years forty-five fatal cases and twenty-five cases that recovered from the attack. Of the latter one may question the diagnosis in all, if one is critical. Among the fatal cases, twenty-eight were proved by autopsy. So you see this is not a very unusual condition within the hospital walls. Many patients are too ill or live too short a time to be sent to the hospital and so those coming to the hospital are decreased in number by these causes. So I am inclined to think that it is by no means a very infrequent disease among patients over forty years of age, and so it is a condition of considerable practical importance to know about and to recognize.

In closing I wish to revert to my opening statement that fourth year medical students of today consider it in rendering a diagnosis on patients assigned to them for history and physical examination, and adopt it or eliminate it with a very considerable degree of accuracy. It has seemed to me that these fourth year students quite often correctly diagnose cardiac infarction, when the referring physician has had no idea of what was the cause of the disability that led him to send the patient to the hospital. Since the diagnosis, as indicated above, is based on very simple clinical methods, available by any physician at the patient's bed-side, one is forced to the conclusion that the difference lies in the fact that the student knows of and understands the condition and appreciates that its occurrence is frequent enough to justify consideration in making a diagnosis, while the practicing physician does not. It is this impression that has led me to think it worth while to present this topic before your association.

## THE PATHOLOGY OF CORONARY ARTERIAL DISEASE\*

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The present report is based on the study of 200 autopsies on cases of obstructive disease of the coronary arteries encountered among a total of 1750 autopsies. The data gathered in this work form too great a bulk to be presented in detail in a preliminary report such as this, and will have to be given in a series of articles in special journals devoted to pathology. The purpose at this time is to call attention to the high incidence of this group of conditions in clinical practice, and more particularly as a cause of sudden death. At the same time a general conception can be furnished of the range of pathologic change found in the series.

Longcopé remarks, probably with justification, that the typical picture of coronary occlusion is not commonly found. The fact that we are able to report 200 instances of advanced coronary obstruction in 1750 autopsies is undoubtedly explained by the source of these autopsies. Our department has performed all postmortem examinations for the Multnomah County Coroner for the past four years. The rules of that office have required that in cases of sudden death and all fatalities without recent attendance of a physician, the body must be examined to determine the cause of death, and the result has been that about one thousand cases of sudden or unexplained death have come to our attention. This procedure has furnished us with a type of cases not commonly seen in the hospital or even in private practice, 137 out of 200 being coroner's cases.

The effect of this regime on the diagnosis of coronary obstruction in Portland has been noteworthy. Up to the time when we undertook this work four years ago, the clinical diagnosis of coronary thrombosis was almost, if not quite, unknown in this city, but since the pathologist has so frequently reported cardiac infarcts, aneurysms and ruptures, the interest of the clinician has been attracted to the subject to the extent that these cases are now frequently diagnosed and usually correctly. Last year several of our graduates interned in Mult-

nomah County Hospital, and these young men usually worked out their coronary cases most accurately.

Of the 200 cases only 40 died following hospital admission, as far as can be determined. It follows that most of the remaining 160 were instances of sudden death, although brief accounts of previous complaints have been obtained from a physician or from members of the family in a large percentage of these. In a certain proportion no history whatever was obtained.

It has been learned that 14 died in bed without immediate preceding illness. Eight died in their chair, one while playing cards, 11 others were found dead in their rooms. Nine dropped dead at their work, 15 fell dead on the street, two more while driving an auto, and two following exercise. One had his fatal attack while on the golf course, and one each died in ambulance, on train and in the barber shop. Several died while straining at stool.

Other facts in symptomatology will help to give a visual picture of the clinical types included here. Varying degrees of anginoid pain were encountered. Eleven were said to have the complex of symptoms constituting typical angina pectoris. This figure of course may be too low. Twenty-nine are known to have suffered pain of a more persistent nature, usually characterized as status anginosus. Fourteen complained of persistent or intermittent pain in the abdomen.

The symptoms may be summarized as follows. Sudden death without forewarning may be the only symptom, as already recorded by various authors. About one-fourth of our cases apparently belong in this category. Others complain intermittently of attacks, such as Gorham<sup>2</sup> refers to as "a sudden attack of severe pain over the heart, radiating to the arm, lasting for several hours, unrelieved by morphine and nitroglycerine, and succeeded by a feeling of soreness for several days. Flatulence, slight nausea, restlessness, and some dyspnea are present; fever 99° to 100°, leukocytosis 18,000. Three days after the onset a localized to-and-fro pericardial friction rub is heard (perhaps for a few hours only) in the fourth left interspace near the sternum. Tachycardia, feeble heart sounds, falling blood pressure are accompanied by signs of edema of the lungs and chronic passive congestion of the liver and, twenty days after the onset, the patient may suddenly fall back on his pillow dead, or may make a partial recovery, depending upon the amount of damage to the myocardium \* \* \*. There is only one physical sign which may be taken as

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almost absolutely diagnostic of coronary thrombosis, i.e., pericardial friction rub \* \* \*. Unfortunately the friction rub is not always present."

In several members of our series the patient complained only of gastric distress or "dyspepsia," as some of them termed it. One elderly man was subjected to laparotomy for supposed intestinal obstruction; autopsy a few days later revealed coronary thrombosis, old and recent, with cardiac aneurysm. Another had a cholecystectomy, and at least two other coronary cases were diagnosed as acute cholecystitis.

Several of our cases complained particularly of choking sensations, sometimes without pain, and in a few instances difficulty in swallowing was a prominent symptom. One aged patient habitually compressed the tongue with a spoon-handle to facilitate swallowing.

Libman<sup>3</sup> and others have referred to the peculiar leaden or ashy or earthy color of the skin in chronic coronary thrombosis subjects. This is almost diagnostic of obstruction of the coronary arteries, although one member of our series, because of the cutaneous pigmentation and low blood pressure, was mistaken clinically for a case of Addison's disease.

One of the most valuable symptoms in the more serious cases has been the drop in a blood pressure which had previously been high. The drop in pulse pressure has frequently been an even more prominent feature. Other symptoms are fatigue on exertion, pain from distant embolism in the brain, lungs, spleen, kidneys, or intestine, and arrhythmias.

Fever, usually moderate, but occasionally high, and leucocytosis ranging from 10,000 to 25,000 or even more, occur in most instances of cardiac infarction during the early stages, and again in the aneurysm stage, due to the development of a mural thrombus in the ventricle. These symptoms have by some been attributed to inflammatory agents, but are usually considered as due to absorption of necrotic material.

Having described briefly the symptomatology of all grades of the very severe and moderately severe types, we should mention the most favorable examples of coronary arterial disease. There is no question that extensive coronary obstruction is sometimes attended by only a transient flurry of precordial pain, and we have even found complete thrombosis of a main coronary artery in subjects who, it is safe to assume, had experienced no noteworthy discomfort therefrom.

Herrick and others have established beyond peradventure that extensive coronary obstruction is not always promptly fatal. Many individuals survive the attack only to suffer subsequent similar accidents, until finally the damage to the myocardium becomes too great to be tolerated. Complete recovery undoubtedly occurs occasionally in even the most extensive lesions, with death later in life from other conditions.

#### CONGENITAL AND ACQUIRED ANOMALIES OF THE CIRCULATION IN THEIR RELATION TO CORONARY OBSTRUCTION

In tracing out the life history of coronary disease we must extend our investigation backward to early life, and even to the time of birth. Thus we are concerned with the role of certain congenital anomalies.

One of the commonest of these is the variation in number of coronary artery orifices, and in addition we have similar conditions in the acquired sense. We had one case in which the right coronary orifice was congenitally absent. In comparison with this we have had six examples of complete closure of one or other orifice, due to scarring of the adjacent aorta, all syphilitic. In 23 other cases one or both orifices have been so constricted by disease as to produce possibly serious effects on the action of the heart. In one heart, both orifices were in the same sinus of Valsalva.

The presence of supernumerary coronary orifices is a factor which is of frequent occurrence and yet has received little attention. It appears from our series that this anomaly is much commoner among cases of coronary arterial disease than in general. Forty-three of our 200 have supernumerary orifices.

The pathogenesis of supernumerary orifices is still open to some doubt. In most instances it probably represents a mere congenital anomaly. Again, it may be produced by the contraction of scar tissue in the aorta, drawing one of the early branches of the coronary arteries into the aortic lining. A third possibility is that a capillary or arteriole arising in the aortic lining may under emergency become enlarged to form an accessory coronary artery. It is obvious that a multiplicity of coronary orifices might seriously affect the fate of a heart condition.

Attention has been called recently to the importance of the position of the coronary orifices. It has been argued that these should lie within the sinuses of Valsalva, and that, when they lie above the margin of the aortic cusp, they are more ex-

posed to the deforming influence of syphilitic scars of the ascending aorta.

The most important anatomic factors, however, are the distribution of the coronary arteries of the heart and their anastomoses. For centuries much controversy has centered on the question whether the coronary arteries are true end-arteries without ample anastomoses. This, as Gross<sup>4</sup> has pointed out, concerns three considerations: (1) whether anastomoses exist between the right and left coronary arteries; (2) whether branches of one coronary artery anastomose among themselves; (3) whether anastomoses exist between the coronary arteries and vessels of adjacent organs.

Thebesius<sup>5</sup> in 1708 was probably the first to demonstrate by dissection that anastomoses exist between the coronary arteries, and later Haller<sup>5</sup> proved the variety and richness of these connections.

In 1810 Caldani<sup>6</sup>, the Venetian, in his Atlas based on careful dissections, described and reproduced the course of one of the important anastomoses about the conus arteriosus. Many others since Caldani's time have described anastomoses in various parts of the heart.

In spite of all these anatomic proofs Hyrtl<sup>7</sup> in 1865 on the basis of injection experiments denied the existence of anastomoses between the coronary arteries, and in 1866 Henle<sup>8</sup> corroborated his findings. As late as 1881 Cohnheim and von Schultness-Rechberg<sup>9</sup> supported the same view by dog experiments. They concluded that clamping of either main coronary artery in a curarized dog caused cessation of the ventricular action within two minutes. This view was confirmed by many observers.

It was later proven by numerous experiments in the hands of various workers that a coronary artery could be tied off without death ensuing or, in many cases, without even serious harm. W. T. Porter's<sup>10</sup> figures may be taken as the type of these results. In his experimental closure of the circumflex branch of the left coronary artery in dogs, stoppage of the heart resulted in 64 per cent; the anterior interventricular 28 per cent; the right coronary 14 per cent; and ligation of smaller branches failed to cause arrest. Porter has also demonstrated that the tying of a single vessel causes a rise of diastolic pressure, without a corresponding increase of pressure in the coronary arteries. In other words, the coronary arterial pressure is lowered, while the pressure in the auricles and coronary veins is increased. Thus it becomes difficult for these arteries to propel their blood. It is probable that sudden

blocking of the nutrient arteries of the human heart by an embolus or thrombus often causes death in some such manner.

More direct evidence for anastomosis has been furnished by the injection of coronary arteries as performed by Jamin and Merkel<sup>11</sup> in 1907, and by Spalteholz<sup>12</sup> the same year, and later by Gross and others.

We must conclude that an extensive anastomosis of the coronary arteries has been demonstrated.

In the human, spontaneous obstruction of the coronary arteries forms the commonest cause of sudden death and a still commoner cause of cardiac pathology. Porter's conclusions from his dog experiments, valuable as they are, do not apply entirely to the human for two main reasons: (1) variation in the coronary circulation in man, (2) the etiology of coronary obstruction.

If the coronary arteries were definitely end-arteries, as was formerly supposed, sudden obstruction must necessarily result in infarction. Fortunately, however, the old view in this regard is not quite literally true. It has been proven that there are connecting twigs which form anastomoses between the various arterial branches. These anastomoses are extremely variable in different individuals, and the outcome of an obstruction will depend on whether this particular individual is fortunate enough to possess adequate collateral circulation. Herein lies the importance of congenital variations in the blood supply of the heart.

But in spite of the anastomoses in the coronary arteries in the human, these vessels, and especially their branches, are in a limited sense end-arteries, and it must not be supposed that man could tolerate a ligation such as Porter performed in the dog. Immediate death or infarction would generally occur.

But the obstruction in man is usually not so sudden as to be comparable to a ligation. In most instances a gradual narrowing occurs from arteriosclerosis, a process which as a rule extends over a period of years. This narrowing is so slow, in fact, that the circulation has ample time to adjust itself. New channels form by the hypertrophy of smaller vessels. If the left coronary artery becomes seriously narrowed, the right and its branches enlarge to take over the additional burden, and form adequate anastomoses with the left. Sclerotic narrowing alone rarely if ever produces serious effects. It is only when some sudden event finishes closing a vessel that infarction or other grave results ensue.

This sudden event is generally a thrombus which forms on the rough calcareous lining of a sclerotic vessel. If the thrombosis had occurred in a normal healthy heart, serious harm would have immediately followed, but the previous narrowing by arteriosclerosis has had at least one beneficial effect. It has given the circulation a chance to form collateral channels, so that when the occlusion finally occurs the blood from the obstructed vessel can be diverted.

In summary we may say, then, that gradual narrowing may occur from arteriosclerosis, but that the sudden obstruction which can cause infarction or death is by a thrombus forming in a vessel already narrowed by arteriosclerosis. Embolism occasionally accounts for an acute obstruction. Syphilitic arteritis may, like arteriosclerosis, narrow a vessel, even to the extent of occlusion, or may be followed by thrombosis or embolism. But the commonest sequence of events is gradual arteriosclerosis, leading to final sudden thrombosis.

The fate of a thrombus is of interest. If prompt death does not supervene, the thrombus organizes, producing a fibrous plug in the lumen. Blood channels burrow often through this and reestablish the circulation through the obstructed vessel.

#### TYPES OF INJURY CAUSED BY CORONARY OBSTRUCTION

Because of the variability in the circulation in the heart of different individuals, and owing to the fact that the obstructions may be sudden or gradual, we find various results in man.

1. The heart may promptly stop. This occurs mostly in those instances in which a thrombus suddenly develops in an artery which has not been gradually narrowed by arteriosclerosis, permitting the establishment of an ample collateral circulation. Even though collateral channels are present, thrombosis may prove promptly fatal, if the anastomoses likewise suffer occlusion.

2. Infarction (nearly always in the left ventricle) occurs in a large percentage of those individuals who do not die immediately following occlusion. Death may subsequently occur in the next few hours or days, due to rupture of the ventricle into the pericardial sac or even through the interventricular septum into the other ventricle. More often, however, death results, not from any such gross mechanical accident, but from myocardial impairment. Dilatation is found at autopsy in a minority of cases, but the usual nature of the fatal event can be better surmised from the animal results of Lewis<sup>13</sup>, who observed rapid successions of ven-

tricular extrasystoles, followed by attacks of ventricular tachycardia at rates of 140 to 400 beats per minute in dogs in which a coronary artery had been ligated. In some instances the ventricles went into fibrillation and the dogs died. Lewis' observations have been confirmed by F. M. Smith<sup>14</sup>.

3. Infarcts, even though extensive, frequently heal with scar formation of one of the following types:

(a) Myofibrosis: scattered patches of scar tissue, frequently encountered at autopsy, but always to be differentiated from the myofibrosis resulting from healed inflammation and other causes.

(b) Large circumscribed cicatrices.

(c) Aneurysms resulting from thinning and bulging of a scarred ventricular wall. Rupture occurs in this stage, but not as commonly as in fresh infarcts.

4. Thrombosis of the ventricle often occurs in connection with infarcts and even more frequently in aneurysms and other extensive cicatrices. In a large percentage embolism to distant parts of the body, and even to the coronary arteries, may result.

5. A few infarcts heal permanently, with restoration of the normal function of the heart, as in our subject who died of disease of the pancreas five years after infarction of nearly half of the left ventricle. In most instances, however, healing of an infarct is followed by fresh coronary thrombosis and new infarct formation. Most of these coronary accidents, then, are eventually fatal.

Thus we see that in the great preponderance of cases there is a definite interrelation or sequence between coronary sclerosis (senile and syphilitic); coronary thrombosis; infarction of heart; fibrous plaques of myocardium; cardiac aneurysm; rupture of the heart; and intraventricular thrombosis. This relationship is clearly expounded in René-Marie's<sup>15</sup> noted thesis in 1896.

#### SUMMARY OF OBSERVATIONS ON OUR 200 CASES

This series embraces 200 instances of advanced coronary obstruction, selected from a total of 1750 autopsies, about 1000 of which were done for the county coroner.

In a total of 145 hearts emboli or fresh thrombi or old thrombi or combinations of these were demonstrated.

In 94 hearts fresh thrombi were present in one or more coronary arteries or branches. The criterion employed in demonstration of these was in nearly every case microscopic examination of a section

through the occluded portion of the artery. Only 40 of the 94 contained either definite infarcts or cardiac aneurysms, although a few more contained patchy necroses. Thus 54 had fresh coronary thrombosis without infarction or aneurysm and it is probable that the most of these represent death in the first attack before an anatomic infarct has had time to form. In general these are the individuals who have dropped dead on the street or in their chair or under similar circumstances, without forewarning in the way of serious preceding symptoms.

In 70 hearts the coronary arteries contained either old obliterative or recanalized thrombi or types of obliterative endarteritis closely simulating these. Aneurysms of the left ventricle occurred in 19 and healed infarcts without formation of aneurysm in 11 more.

Embolism contributed 14 instances of coronary occlusion, 9 of which resulted in infarction. The other 5 comprise cases which resulted fatally before the anatomic evidences of infarction could manifest themselves.

The total number of acute infarcts collected is 46; healed infarcts 11; and cardiac aneurysms 19; total (after deduction for four duplications) 72 infarcts and aneurysms.

Definite indisputable aortic syphilis was present in 35 or 17.5 per cent of the 200. Examination of the myocardial and coronary microscopic sections has revealed a considerable number of additional syphilitic involvements of these tissues, but this tabulation is not completed and will be presented later. One important observation is, however, that syphilis accounts for all of our six instances of complete closure of a coronary orifice, all left. Among the 35 hearts accompanied by a definitely syphilitic aorta, 10 manifested acute coronary thrombosis, 5 old coronary occlusions, and 6 contained infarcts. Patchy necroses were more frequent than infarcts, but the number of such cases is not yet determined. Our data on syphilis are far from complete, but we are convinced that this infection plays a role in coronary thrombosis and infarction.

Rupture of the heart, always of the left ventricle, occurred in 14 of our cases, exactly one-half of which fall in the definitely syphilitic class. One ruptured through the septum interventriculorum into the right ventricle, the others into the pericardial sac. Acute infarcts caused 7, syphilitic myocarditis 3, rupture of a syphilitic coronary with resulting myocardial apoplexy one, and rupture of dissecting coronary aneurysm one.

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#### CARDIAC FACTORS IN SURGICAL INDICATIONS\*

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Frequently the most difficult problem in the selection of a surgical risk is the estimation of the functional ability of the heart. Such information can not be obtained from a single test but must be obtained from the history, physical examination and laboratory aids. Too often failure to recognize or interpret correctly signs or symptoms leads to a catastrophe at or following operation, while less frequently patients are denied surgery upon some trivial and unimportant finding.

It is of importance to have a knowledge of abdominal symptoms that cardiac disturbances can produce, so that they may be differentiated from similar symptoms produced by surgical lesions. The importance of careful heart examination in surgical indications is quite apparent, regardless of the surgical pathology.

Despite the splendid descriptions of cardiac ir-

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regularities, they are still poorly understood and interpreted by many physicians. Even sinus arrhythmia, the benign type of irregularity due to disturbance of the impulses at the seat of their origin and discharge, so commonly seen in children and young adults, may not be interpreted correctly and the patient be put down as a poor or questionable surgical risk. Disturbing influences reach the pacemaker through the vagus. Respiration is the most common source of interference of its normal activities. This irregularity is readily recognized by an increase in the heart rate during inspiration—a waxing and waning of the pulse. The interval between the first and second sound remains constant, the increase in rate being made at the expense of diastole. It is because of this fact that exercise with an increase in the rate of the heart will cause it to disappear and thus differentiate it from the irregularities that might be mistaken for it.

But recently a girl in adolescence was brought in for examination because of cardiac irregularity. At a former examination she had been told she had serious heart trouble. Diseased tonsils were given as the source of her trouble and their removal advised. The parents had not accepted the advice for fear that their daughter might not withstand the operation. The tonsils were diseased and needed removal. They had not, however, caused any cardiac damage.

MacKenzie believed that sinus arrhythmia not only has no serious significance but that it in itself speaks for a healthy myocardium. He believed that sinus irregularity with a pulse of 70 or 80 following a febrile disease is evidence that the heart muscle has escaped injury. The basis for this belief is that sinus arrhythmia occurs in slow hearts only, and consequently could not occur in a heart being excited by the presence of toxins or by a permanently damaged myocardium.

Since extrasystoles are so common they are frequently seen in patients with surgical lesions. The presence of extrasystoles does not in itself add to the surgical risk. It is well known that they occur in grave heart diseases as well as in hearts that are apparently normal from every other standpoint. Other things than the irregularity must determine whether the heart is capable of withstanding the strains incident to surgery. Since extrasystoles are often the result of focal infection, they are not uncommonly observed in chronic cholecystitis. It has been observed that removal of this infection many times causes their disappearance. Premature con-

tractions, when they occur singly, are recognized without difficulty. Auscultation in most cases will suffice to make the diagnosis. One hears two sounds hurriedly executed just after the normal sounds, which are then followed by a longer pause. Occasionally extrasystoles are so timed that they may follow every beat or every second or third beat, giving rise to the so-called bigeminal or trigeminal pulse of older writers. Such types may cause some difficulty in recognition. Since extrasystoles do not occur in rapid hearts, the exercise test is of value in their recognition.

Auricular fibrillation, the most common of the more serious types of arrhythmia, adds greatly to the dangers of a surgical risk. It is not, however, an absolute contraindication to surgery. Even though handicapped by this disorder, a heart is capable of maintaining an adequate circulation as long as the ventricular myocardium is not too badly damaged. Patients with auricular fibrillation can often withstand extensive surgical procedures as long as the heart is compensated. For the most part surgery should be limited to emergency measures.

Auricular fibrillation is readily recognized by the ordinary methods of physical examination. The pulse is totally irregular, ever changing in time amplitude and strength. Auscultation gives added information. One hears a rhythm that formerly was aptly called *delerium cordis*. In contradistinction to other irregularities previously mentioned, exercise will tend to make the heart more irregular as the rate is increased. It may be accepted as a law that, when a heart rate is 120 or over and irregular, the irregularity is always due to auricular fibrillation. Results of treatment of auricular fibrillation are variable, depending on the pathogenesis. When it occurs in a rheumatic heart, digitalis brings about phenomenal results. Less impressive are the results of digitalization of a heart with auricular fibrillation, in which the pathology is due to senile changes. Quinidin is an adjunct in treatment of selected cases. Auricular fibrillation, occurring in the course of an exophthalmic goiter, is frequently transformed into a reasonable surgical risk by the use of Lugol's solution.

Disturbances in the intracardiac conduction system, giving rise to various forms of heart block, rarely present themselves in the selection of a surgical risk. The cardiac stimulus may be disturbed at any point in the conduction system, between sinus and auricle, auricle and ventricle or in one of the branches of the bundle of His, giving

rise to sinoauricular, auriculoventricular or bundle branch block respectively. The common location of the obstruction to the impulse is between auricle and ventricle in the main bundle of His.

The obstruction is the result of acute inflammatory, toxic degenerative, arteriosclerotic or syphilitic changes. Such changes give rise to lengthening of q-v conduction time, occasional dropped beats, partial heart block or complete heart block, depending upon the extent of the pathology. The minor disturbances in conduction are not in themselves seriously disabling to function but may represent serious cardiac damage.

Recognition of heart block is best accomplished by the use of the polygraph or electrocardiograph. Some forms may be recognized or strongly suspected by the ordinary clinical means.

Lengthening of the a-v interval must be determined by graphic means. Single dropped beats are usually recognized without difficulty but must not be confused with barely audible extrasystoles.

Two to one heart block is to be expected when the pulse lies between 40 and 50. It is an unstable condition and sometimes appears and disappears with variations in exercise. Thus, a heart rate of 40 may suddenly change to 80 and drop back equally suddenly to 40.

In complete block the ventricular rate lies between 30 and 35. This rate can not be changed by exercise, since the ventricle is under no form of nervous control. It is in this condition or during the transition period between partial and complete block that Stokes-Adams syndrome may occur.

Unfortunately to many physicians the presence of a murmur indicates valvular damage. Often upon this finding alone the unfitness for operation or choice of less dangerous anesthetic is based. It is important to differentiate functional and organic murmurs. The functional systolic murmur at the pulmonic area is well understood; indeed many physicians think it the seat of all accidental murmurs. Many functional systolic murmurs occur at the apex. They are often the so-called cardiorespiratory murmurs. These are short, soft murmurs heard during certain phases of respiration only, most often the mid-point of inspiration. Functional murmurs and those of mitral insufficiency in which the heart is well compensated do not detract from operability.

Mitral stenosis has always been considered one of the most serious types of valvular disease. Major surgery has been regarded dangerous and pregnancy

contraindicated with this lesion. With the modern conception of cardiac physiology, that valvular disease is of inverse importance to the degree of compensation and its ability of remaining so, many obstetricians are permitting women to go to term, and surgeons are successfully operating on important surgical lesions in its presence.

In the diagnosis of mitral stenosis it is well to remember that murmurs, due narrowing of the auriculoventricular ostium, which are barely perceptible in the sitting position, become very distinct when the patient is lying on his side. It would not be amiss to point out another error in the diagnosis of mitral stenosis. Frequently a rumble is heard at the apex, due to the impact of the heart against the chest wall. This can be made to simulate a mitral stenosis further by placing the bell of the stethoscope on the chest in such a manner that it bridges two ribs, permitting accentuation of the vibration of the chest wall. To obviate this the bell of the stethoscope should be placed in such a manner that one edge rests in the interspace.

Aortic insufficiency should always be regarded as an added danger to a surgical risk, even though there be no evidence of myocardial insufficiency. It is a type of valvular lesion in which sudden death may occur. The diastolic murmur of aortic insufficiency is often overlooked because of the soft blowing character and the difficulty of hearing it in the recumbent position. Murmurs of the aorta and aortic valve are heard best in the sitting position and even better during complete expiration, the patient leaning well forward.

Stenosis of the aortic valve when marked is a serious handicap to the heart. It adds to the danger of operation. A word of caution in the diagnosis of aortic stenosis might well be given here. Too often the presence of a systolic murmur at the aortic area is considered sufficient to make a diagnosis. It is undoubtedly true that early in the development of this lesion the only sign may be a murmur, but to attribute all systolic murmurs at aortic area to a stenosis of the ostium is a mistake. It is far wiser to reserve the diagnosis of aortic stenosis to those cases in which there is a systolic murmur, as a rule rough, heard at the aortic area, transmitted toward the neck as far as the carotid, usually with the absence of the second sound and associated with a palpable thrill over the base of the heart.

Recognition of myocardial insufficiency in the heart with a regular rhythm, whether it be due to myocarditis of infectious origin or more especially

that due to myofibrosis of advancing years, is a difficult problem. The difficulties encountered in the recognition of a disease with so few physical signs must be apparent. The history necessarily is of great importance. The only evidence pointing to cardiac failure may be slight dyspneic attacks at night, unusual dyspnea upon walking up an incline, slight puffiness of the ankle at night or precordial distress brought on by exertion. It is just in this type of myocardial insufficiency that *pulsus alternans* may be overlooked. The pulse is regular; the heart tones are normal. The history of dyspnea may not have been elicited or not considered seriously. In every patient of advancing years with a history of dyspnea no matter how slight, in whom an operation is being considered, the presence of a *pulsus alternans* must be given serious consideration. It can readily be recognized by the use of the sphygmomanometer in the following manner: The blood pressure is taken by the auscultatory method in the usual manner. The pulse is obliterated. When the first tones come through a slow rate is discovered. This suddenly becomes doubled, when the pressure is reduced five to fifteen millimeters of mercury, and becomes equal to the heart rate. As a matter of fact, many cases of *pulsus alternans* are discovered in this manner in the routine taking of blood pressure.

The importance of *pulsus alternans* from the standpoint of operative risk is very great. It is evidence of a heart hard pushed and, therefore, of a grave cardiac disease. Patients with this condition usually die within two years of its discovery. Needless to say, to operate in the face of a *pulsus alternans*, except for emergencies, is foolhardy indeed. Myocardial insufficiency without *pulsus alternans* is also of much importance as a modifier of operative indications. By recognition and institution of prophylactic measures many an operative death will be prevented.

So frequently is myocardial insufficiency associated with or the result of renal damage, that chronic nephritis must be considered here also. It must be realized that renal impairment may exist, even though urinalysis at the time reveals no abnormalities chemically. Too often this is the only test used in the estimation of renal ability in the cases that should be studied more carefully. The ability of the kidney to respond to emergencies should be the determining factor in an operative risk. Functional tests dealing with the flexibility of the kidney, when put to the task of handling

large and small amounts of water, should be instituted. Examination for albumin, casts, the usual hospital routine, is of lesser importance. Estimation of the nonprotein-nitrogen bodies of the blood may be of value, especially in prostatic surgery. The use of dyes in the estimation of the extent of a chronic nephritis is of doubtful value.

Angina pectoris naturally adds greatly to the dangers of an operation. Its recognition is not difficult, when typical attacks occur with pain over the heart, vise-like in character, radiating down the inside of the left arm to the little and ring finger, with a sense of constriction about the chest, associated with a fear of impending death. Attacks are not always so typical. Cardiac pathology may give rise to pain so variable in location and radiation that difficulty may be experienced in differentiating it from abdominal lesions. It may be confined to a small area over the heart or an area from the ramus of the jaw to the groin. It may have its origin in the epigastrium. Radiation may be down one or both arms, to the neck, through to the shoulder blades or elsewhere. Because of close association between the nerves of the autonomic nervous system supplying the viscera, it is not uncommon to have salivation, gas, belching, vomiting, diarrhea, frequency of urination or similar phenomena during an attack. Such experiences may lead to mistaken diagnosis and worse than needless surgery. An additional difficulty in diagnosis may arise, if the pain is the result of a cardiac infarct, since in this condition there may be slight elevation in temperature, a feature which when associated with epigastric pain might lead to the mistaken diagnosis of an infectious lesion. It is a prevalent idea that there must be some physical signs of valvular disease or a hypertension associated with angina pectoris. This is not true. It is quite common to find no objective evidence of heart disease.

Many a death at or following an operation is averted by the ability of the heart, whether normal or not, to withstand severe strains and still maintain an adequate circulation. Additional safety may be obtained by careful heart examination, which may reveal handicaps that many times can be lessened or removed by the institution of prophylactic measures. On the other hand, knowledge of abnormal signs and ability to evaluate them is important so that patients are not denied needed surgery because of some insignificant finding. Careful heart examination and consideration of its functional ability means safer surgery.

## SOME EXPERIENCES IN LOCAL ANESTHESIA IN GOITER SURGERY\*

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To enter into the discussion of local anesthesia and to apply it to a special field calls for at least a slight consideration of the history of the use of local anesthetics in general. To Heinrich Braun, who has often been called "the father of local anesthesia," should go a great deal of credit for its development.

Preceding the time of the discovery of cocaine little or no real progress had been made in local anesthesia. It is true that in medical literature we find mention many times of attempts to produce local anesthesia in ancient times. Medical history tells us that the Egyptians, Greeks, Chinese and Romans were more or less acquainted with the narcotic principle of certain plants. Early experimenters from these countries used these plants to make various concoctions which they drank for the relief of pain during surgical operations. Many local applications were used, much of it being associated with religious rites. The Egyptians used crocodile fat as an application to the skin preceding the operation. Then, again, we hear of the "stone of Memphis" which, according to Plinius, produced local anesthesia, if rubbed on the skin with vinegar.

The thing we must appreciate in this connection is that a serious endeavor was made in those early days to discover something that would relieve pain in surgical operation or manipulation. One of the earliest methods of relieving pain was based upon the principle of the compression of the nerve trunk, and many of the ancient medical men advised cutting the nerves for the relief of pain. As a matter of fact, compression of the nerve or of an extremity was recommended up to very recent times. This, of course, was unsatisfactory we realize, because of the permanent injury which invariably resulted.

Chemical agents even in ancient times were used more successfully than any other method. During the middle ages we find the local use of narcotic drugs to be often recommended for the relief of pain during surgical procedure. They used such drugs as the poppy, aconite, hyocyamus, henbane and so on. Of course, we must realize that very few adequate results were obtained, but the slight success encouraged investigation and study and

eventually led to the discovery of our useful local anesthetics of the present day.

Coming down to modern times, we find as late as 1883 such a procedure as the burning of a small strip of skin with Vienna paste. The electric current was recommended, and Francis, a dentist, claimed to have obtained results from the use of the electric current for the painless extraction of teeth. We know that the electric current as an anesthetic is a failure and the only explanation for the conflict regarding its failure and its value must come through the personal element of the over-imaginative patient or operator, for no matter how imperfect a method may be one will always find some believers.

In 1853 Dr. Alexander Wood, of Edinburgh, worked out the hypodermic needle injection. Upon this discovery is based the success of local anesthesia. Dr. Wood, in those early days, used morphine and tincture of opium which were injected in and about the nerve trunk. We can readily appreciate that the results in the use of morphine were undoubtedly due to its systemic effects.

We may consider 1884, the date of the introduction of cocaine as a local anesthetic, as the starting point of the scientific results of today. Cocaine was the controlling local anesthesia for many years but because of its great toxicity investigators were searching for a safer drug; for in many operations, especially the large operations, cocaine was absolutely unsafe and a great many deaths were recorded from many parts of the world. According to Weygand, five to thirty per cent of the cases injected resulted in symptoms of poisoning which were often very severe.

Following the discovery of cocaine and its use many drugs were experienced with and used, among them being tropa-cocaine, eucaine, aneson, stovaine, alypin and novocaine. Novocaine, having been proved to be the most safe and satisfactory, has become the local anesthetic of choice in surgery over the entire world. The chemical properties of this drug were discovered by Einhorn. It is a monochlorhydrate of p-aminobenzoyldiethylaminoethanol. The salt crystallizes from alcohol and will melt at a temperature of 156 degrees, being soluble in equal quantities of water and neutral in reaction. By actual experimentation it is found to be about one-seventh as toxic as cocaine. To be successfully used it should be isotonic, a simple way being to take 100 c.c. of the one-half per cent solution and add to this eight-tenths of a gram of sodium chloride. Novocaine has the advantage of being nonirritating to the tissues and can be kept for months with no

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deterioration. Boiling does not injure it, hence the advantage of safe sterilization.

When I first began to use novocaine in goiter surgery, I used adrenalin with it and believed for some time that the adrenalin was necessary to delay the absorption of the novocaine. I soon found, however, that there was much giddiness and faintness from my local anesthesia and I decided to leave out the adrenalin. I noticed immediately that my patients were in much better condition during the operation and I was not worried by the untoward effects of adrenalin. I now never use adrenalin and find my anesthetics just as satisfactory and their effect continues the full time necessary for a thyroidectomy.

It is the opinion of the writer that local anesthesia has all too often been considered a competitor of general anesthesia. This I believe is a mistake. Local anesthesia has its place, as has general anesthesia. There are certain fields where a general anesthesia is far superior to a local and vice versa. Again, there seem to be other fields where a combination of the two is advantageous. In goiter surgery I believe we have one field where local anesthesia is by far the safer and more satisfactory method and it will be my endeavor to give some of the reasons for believing this to be so.

Let us first consider the goiter patient. I mean by this the very sick exophthalmic goiter case or the very sick toxic adenoma case. We have here patients with many serious complications. The heart has suffered much, the kidneys have suffered much, the whole gastrointestinal tract has suffered much, especially in the exophthalmic type. The vascular system has been greatly oppressed. In fact, after you have gone over one of these cases carefully you cannot but appreciate the great amount of damage that has been done to all of the viscera. Our problem, then, is to find means of removing this goiter with as little as possible irritation and shock.

It should be the desire of the operator to interfere as little as possible with the diet of the individual, to cause as little shock as possible to avoid hemorrhage, to conserve the strength of the heart and to lighten the load on the circulation and the kidneys. To one who has practised general surgery for many years and who has had the added opportunity to see some goiter cases, it is easily seen that there is a distinct difference between goiter and other major surgery. There is no other type of operation which gives these severe reactions that often occur after a thyroidectomy.

Call to memory some of your goiter cases. If you have been unfortunate in one of these cases the third or fourth day after an operation, think this point over, "why did you lose the case?" Why do these cases die usually before the fourth day, if they are going to die? What happens? Is it because the patient is so much undernourished and run down that any additional load often results in infection which kills the patient? Plummer says that infection kills most of these cases. It is my experience and belief that the symptoms of these cases during the reaction clearly prove that infection has much to do with the high mortality in this type of surgery. Certainly it is known there is no type of surgery that can cause the surgeon more worry and grief for two or three days after the operation than operations in this field. One of the things that the writer has noticed, and upon which there has been little or no comment, is the great amount of mucus thrown off by the patient following any work done on the thyroid, more especially in the exophthalmic or the mixed type.

What are some of the advantages of local anesthesia? It enables one to feed the patient right up to the time of operation and to have practically no interruption following it. It gives the operator cooperation from the patient during the operation, making it possible for the patient to warn the operator when the recurrent laryngeal nerve is in danger or has been pinched. Many times in my own experience I have been very close to the recurrent laryngeal nerve and have discovered my proximity to it by the disturbed breathing or changed voice of the patient. Again, a patient who is awake can cooperate with the surgeon by coughing, following the removal of the gland. This will dislodge a clot or poorly secured tie and it will do this while the field is under the direct observation of the surgeon, not waiting until the patient is back in bed, waking from a general anesthetic with a confused mind. Again, when one becomes thoroughly conversant with local anesthesia, he has a tendency toward developing rapid technic because of the continual desire to get the patient off the table as quickly as possible, knowing that she is awake and uncomfortable. This certainly is of great importance in this type of surgery.

Then, too, we find that the shock, which is one of the important things not to be overlooked, is severe in direct proportion to the amount of trauma and anesthesia. We must prevent shock and, when the patient is awake, the surgeon and his assistants

will be very careful, even in sponging the wound, not to excite or injure the patient. I find that this care does not exist to such an extent where a general anesthesia is used. Then, again, the patient's comfort during the operation is not given the same attention that it is during local anesthesia. If the patient is awake, she will insist upon comfort for the arms, back and neck. Even the heavy arm of the surgeon or the assistant may rest on the patient's chest and many have been burned with hot sponges. These things will not occur when the patient is awake. In fact, the very resistance of a patient under general anesthesia, or during the time she is recovering from a general anesthesia, is a great load to one of these sick patients. It is true, our mortality today, especially in the exophthalmic goiter cases, has been much lowered through our preparatory use of iodine and it is true we are losing very few patients. Certainly it should be our endeavor to lower our mortality still more. If you were the patient, or if the patient were a member of your own family, would you not prefer a local anesthesia, if you were absolutely certain that no pain would be suffered? And is it not convincingly shown that the risks are greater with a general anesthetic, especially in the very sick cases.

The objections to a local anesthetic are very few, mainly hinging around the difficulties encountered in operating upon nervous or apprehensive patients. I can give assurance that one-fourth of a grain of morphine or less, given one hour before operation will remove this objection. You may fear that the patient will object to a local anesthetic. It is the writer's experience to have given this strict consideration for a period of years and to have found no patient, who had confidence enough in the ability of the surgeon to handle the case, who has offered any serious objection or advice as to the type of anesthetic to be used. One has but to study anesthetics to realize that every anesthetic has a tendency to produce an acidosis in the tissues, more particularly the general anesthesia, for no patient can be put to sleep, even with the mildest of anesthetics, without increasing the load upon the heart, kidneys and other viscera.

It is in pulling these severe goiter cases through and over the crisis that you will secure your greatest satisfaction and incidentally your greatest reward. If you can guide yourself through the treacherous paths of a toxic goiter and keep your mortality on the safe side of the ledger, you will be willing to put a lot of effort into any technical improvement. If, after you think it over, you feel

that your technic in local anesthesia has been at fault, you will certainly do all that is possible to improve it.

It has been the writer's experience, in the use of local anesthesia, that the infiltration method is much more satisfactory than is any other. The blocking of the nerves is satisfactory, but when all is said and done you will supplement your blocking by infiltration. After infiltration under the skin, over the anterior surface of the neck, I always inject about fifteen c.c. anterior to the sternocleidomastoid muscle, inside of the carotid sheath, outside of the trachea. It is best to inject this, if necessary as you go, posterior to and about the two superior poles of the thyroid gland, fifteen c.c. on either side. Then, make your incision through the skin, down to the fascia, following this by an incision through the fascia.

If, as occasionally happens, the patient feels any sensation on making the incision through the fascia, supplement by using more novocaine. When you have reached the muscles it is a good plan to inject some novocaine in the sternocleido muscle on each side, so that in retracting the muscles the patient will feel no discomfort. When the gland is exposed, inject some of the novocaine solution in the lobe that you are going to work on first, especially about the superior pole. Also inject some of the solution in the line of cleavage between the gland and its capsule. Now the lobe on that side is removed and, if at any time the patient complains of any sensation, have your syringe ready and inject a little more at the point of sensation. This same procedure is followed when you come to the removal of the other lobe. I always instruct my nurses to keep a syringe full of novocaine ready and I tell the patient that I want the fullest information; if there is any sensation to tell me, assuring her that there is no necessity of any pain. This gives the patient confidence and assures the surgeon that she will complain of pain having occurred, and thus secure perfect anesthesia.

We must lower our mortality. This is our problem. A large clinic operating on thousands of cases a year must occasionally lose a case, but with the rest of us, operating on hundreds instead of thousands, it surely is important to protect ourselves and our patients.

It has been my good fortune to have spent some time in Europe this year and, while I do not believe their technic is up to the standard of this country, yet we must give them credit for the scientific use of local anesthesia. Not once during my stay in

Switzerland did I see a goiter removed under general anesthesia. In our own country much credit must be given to Farr of Minneapolis for his strenuous and scientific emphasis of local anesthesia, I wish to quote from him because I believe it will cause us to reflect seriously upon this subject: "Many of the profession fail as yet to see the great value and true scope of local anesthesia in general surgery. It has been frequently exemplified in the history of medicine that a large proportion of the medical profession holds back and refuses to accept truths when they are presented. The application of these truths may even meet and relieve unsatisfactory conditions and yet they will excite prejudice and be attacked by many conservative physicians." Again, I wish to quote Graham, who says: "The phenomenon of narcosis is always accompanied by a condition of diminished oxidization. It, therefore, always indicates a condition of more or less severe asphyxia of the tissues, even if frequency and depth of the respirations of the narcotized individual are normal."

#### CONCLUSIONS

1. Local anesthesia will be a success to each individual surgeon in proportion to his ability to use it and understand it. Quoting W. J. Mayo on this point, "Heretofore few surgeons have given the time necessary to master the method of administration and the details have been carried out by assistants equally unqualified."

2. Local anesthesia increases the speed and efficiency of the operator, thus aiding in relieving shock.

3. Local anesthesia is of great value in eliminating the danger of injury to the recurrent laryngeal nerve.

4. During a local anesthesia the patient is not continually rebreathing particles of mucus-laden infection.

5. There is much less load and responsibility on the general circulation and the viscera as a whole, thus eliminating to a large extent acidosis and the possibility of infections.

6. The patient can be very quickly returned to his room without the nausea and well-known discomforts of a general anesthesia.

7. There is a great deal less danger from hemorrhage, due to cooperation on the part of the patient during the operation.

8. Injuries to the arms, back and other locations and burns from hot sponges do not occur, or certainly rarely with local anesthesia.

## THYROIDECTOMY UNDER LOCAL ANESTHESIA\*

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Within recent years there has been a remarkable reduction in the operative mortality in the surgical treatment of goiter. Several important factors have contributed to the success of the surgeon. Chief among these are the following: Patients are seen earlier in the course of the disease because of the quickened diagnostic sense of the physician; the basal metabolic unit, the x-ray and other laboratory services have proved valuable aids to early diagnosis; the perfection of operative team work has decreased the length of time required for operation; the discovery of the efficacy of iodine as a surgical aid in the treatment of exophthalmic goiter has practically eliminated the dreaded postoperative hyperthyroidism and also the added risk of ligation and multiple stage operations; and, finally, improvement in the methods of administering the older kinds of anesthesia, together with the discovery of new types of anesthesia has contributed to reducing the mortality factor in thyroidectomy.

The treatment of exophthalmic goiter has been almost revolutionized by the use of iodine as an adjunct to surgery. Not only has the classical operation of ligation, so popular during the past quarter of a century, been eliminated from the list of every day operations, but the multiple stage procedure that was rapidly coming into vogue is now likewise passé.

The use of local anesthesia in goiter operations first became popular in Kocher's Clinic, and for years it was considered the method of choice by many surgeons. It never became as popular with American as with European surgeons, however, and in many goiter clinics of this country ether and nitrous oxide have remained the types most commonly used.

The introduction of morphine and scopolamine, "twilight sleep," as it was popularly termed, proved a valuable aid to the use of local anesthesia. This method grew in favor for a while, but soon there were reports of various unsuccessful and even fatal cases, probably from the use of too large doses of scopolamine. Although this drug has been used in several thousand operative cases at the Jack-

\* Read before the joint meeting of the American Society of Regional Anesthesia and the Eastern Society of Anesthetists, Philadelphia, Oct. 26-30, 1925.

son Clinic, we have yet to observe an unfavorable effect when a moderate dose is employed. The occasional so-called scopolamine jag is readily controlled by morphine or nitrous oxide.

Although the novocaine-morphine-scopolamine method of anesthesia proved very successful in operations for adenomatous goiter and for the incipient cases of exophthalmic goiter, there were certain disadvantages to its use in advanced cases of the latter type. These patients, always apprehensive and high strung, were subjected to undue shock and stimulation by even the trivial ordeal of ligation. In such cases nitrous oxide-oxygen analgesia proved useful and together with ethylene-oxygen was rapidly becoming the anesthesia of choice. There are, however, certain objections to these anesthetics that are obvious to the surgeon.

#### OBJECTIONS TO GENERAL ANESTHESIA

1. An additional strain is imposed upon the heart, kidneys, liver, and other important organs that may have been already severely damaged.

2. The tendency toward postoperative hyperthyroidism is increased.

3. Postoperative tracheitis and pneumonia are more apt to occur.

4. Postoperative vomiting, a factor of importance in exophthalmic goiter, is a frequently annoying sequel.

5. The venous congestion, occurring especially in the use of nitrous oxide, causes the operative field to be more soiled, and the danger of injury to important structures, such as the recurrent laryngeal nerves, is thus increased.

6. The tendency to postoperative hemorrhage is greater.

The discovery by Plummer of the efficacy of iodine in the treatment of exophthalmic goiter at once proved a great boon to the advocates of local anesthesia for thyroidectomy. The clinical improvement in these patients, following the proper preoperative preparation with iodine, was such that it became obvious that they would tolerate a local anesthetic as favorably as patients with nontoxic goiter. Within forty-eight hours after the administration of iodine the extreme restlessness, nervousness and emotional irritability so typical in these cases begin to disappear. The distressing palpitation and tachycardia are relieved, and quiet sleep takes the place of insomnia. We recently completed a series of 100 primary thyroidectomies for this type of case. Local anesthesia was employed in all but

two of these cases. One of these patients was a boy of nine and the other a girl of fifteen. In my opinion the only contraindication now to the use of local anesthesia for thyroidectomy is in children.

Since objections to general anesthesia in these cases have been noted, it might be well briefly to mention some of the advantages of local anesthesia. It has been well said that statistics may be made to tell anything, even the truth. Thus, when the operative mortality for various series of goiter operations are compared, the actual figures may not truly portray the end-results. Probably the most distressing complication of thyroidectomy is injury to the recurrent laryngeal nerve. It has been my misfortune to injure this nerve and I am sure that anyone who performs a large series of thyroidectomies must sooner or later encounter this complication. The tendency to such an error is greatly decreased through the use of local anesthesia. Hemorrhage is lessened; the operative field may be kept clean and dry; and the anatomy of the region is clearly apparent at all times. As the surgeon is able to converse with the patient, he may at once detect any injury to the nerve. The immediate removal of an offending hemostat or suture may result in only temporary injury to the nerve.

The surgeon need not be hurried in operating. Realizing fully that there is little danger of pneumonia or of cardiac embarrassment, he can work as slowly and carefully as he desires. Too great speed in goiter operations is the most frequent cause of postoperative tracheitis and anoxemia, resulting from injury of the nerve. The tendency to hemorrhage in operations performed under local anesthesia is practically eliminated because at the completion of the operation the patient may be made to cough and strain, and thus any bleeding vessels that have escaped ligation may be detected. Finally, injury to the tissues is minimized because the surgeon and assistants must work carefully and gently.

#### ADMINISTRATION OF LOCAL ANESTHESIA

All unnecessary noise must be eliminated from the patient's room after the first hypodermic of morphine, 1-4 gr., which is given one hour before operation. Fifteen minutes later scopolamine, 1-300 gr., is injected. Vaseline cotton is placed in the patient's ears, the eyes are covered, and head towels applied. In extremely nervous persons, a second hypodermic of morphine, 1-6 gr., may be required before operation is begun.

Half an hour after the hypodermic of morphine and scopolamine the patient is brought to the oper-

ating room and prepared. The position of the patient on the operating table is one of the most important points in the successful completion of the operation. The patient's shoulders should be on a level with the top of the table, so that the head falls back far enough to bring the neck into a convex position. After the field of operation has been prepared, injection of the gland is begun. We prefer the infiltration method to the technic of blocking the cervical plexus by the lateral direct route, because it requires less time and is more readily and safely carried out by intern assistants.

Usually 200 to 400 c.c. of a warm solution of 0.5 per cent novocaine, containing no adrenaline, is employed. First, a central wheal is made in the midline and from this area the entire operating field is quickly injected, one anesthetist working on each side. After the initial wheal is made there is little or no pain. The subcutaneous tissues and sternohyoid and sternothyroid muscles are injected until the perithyroid zone is anesthetized. Bilateral injections at the border of the sternomastoid muscle, with subcutaneous and subfascial injections in the area of the skin incision, completes the anesthesia of the anterior surface of the gland. After the gland is exposed both poles are injected at once. This will practically eliminate the sensation of pain that may be caused by clamping the superior thyroid pole and vessels.

A review of operations performed for goiter at the Jackson Clinic from October, 1922, to October, 1925, shows a total of 465 thyroidectomies and 75 ligations or stage operations. Since June, 1924, no ligations or stage operations have been done. During the past twelve months 221 thyroidectomies have been performed with a mortality of 0.09 per cent; one death was from pneumonia and the other from embolism on the tenth day. This last series includes 49 cases of toxic adenoma, 109 cases of nontoxic adenoma, 60 cases of exophthalmic goiter, one case of intrathoracic goiter, and two cases of carcinoma. Local anesthesia was employed in all but six cases.

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LOWERED FERTILITY IN THE MALE. Donald Macomber, Boston (*Journal A. M. A.*, Nov. 21, 1925), emphasizes the importance and frequency of low fertility in the male and urges the value of careful study in each case. Such a study must include a thorough microscopic examination of the secretions and of the spermatozoa as well as palpation and inspection of the organs. It is to be supplemented by an exhaustive inquiry into the habits of the patient's life, with particular reference to those of sex. It is only on the facts accumulated in this manner that a satisfactory opinion as to fertility and a rational plan of treatment can be outlined.

## INTRATHORACIC GOITER\*

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Mr. S., age 68, was admitted to Columbus Sanitarium on the evening of May 5, 1925, at 6 p. m. with an acute and alarming dyspnea. The history in brief was that he had had a chronic bronchitis of a mild nature for many years. During this period he had had several acute exacerbations. Seven or eight years ago he had been operated on for a rather large cervical goiter, with a good result. Since that time he has been actively employed as a laborer in an aeroplane factory. For the past two or three years he has breathed with an audible noise, which is increased from exertion. He has formed the habit of sleeping with his head in a certain position, elevated with pillows, because he breathed easier when so placed. Two days prior to coming to the hospital he had contracted a severe cold, associated with which had been a marked increase in his respiratory difficulty.

At the time of admission he had a temperature of 102; pulse 110, and quite irregular; a mild degree of fibrillation; blood pressure 210-110. There was a trace of albumin in the urine with a few hyaline and granular casts.

It is difficult for one to forget the picture this old man presented. He was actually fighting for breath. Unable to lie down because this position completely shut off his breath, he would sit up or stand and grasp any fixed object within reach in order better to be able to use the extrinsic muscles of respiration. His chin was pushed forward rigidly. With each respiratory effort there was a loud crowing noise, much like that made by a child with croup. His face, lips and ears were cyanotic. The veins of the neck were greatly distended. There was a moderate degree of dilatation and varicosity of the superficial veins on the upper part of the chest. (A condition which I have not seen except in association with intrathoracic goiter or mediastinal tumor). Over his chest could be heard many mucous and gurgling rales. Just above the left sternoclavicular junction was a small hard mass which seemed to blend with a larger tumor down in the thorax. There was substernal dullness, extending about two inches to either side of the sternum. The accompanying x-ray photograph completes the diagnosis (fig. 1).

### DISCUSSION

It was apparent that this man, with an acute respiratory infection, would likely develop a pneumonia, if he did not die of strangulation beforehand. Considering the damaged condition of his heart together with his respiratory difficulty and advanced years, the outcome of a pneumonia, under such conditions, could only be fatal. It was, therefore, decided to operate on this goiter as an emergency. This case, however, is not being reported because of the unusual circumstances which necessitated an emergency operation for goiter, but to stress the importance of dealing surgically with all intrathoracic or partially intrathoracic goiters as well as all other goiters, be they toxic or not, that are making definite tracheal pressure.

\* Read before a Meeting of Seattle Surgical Society.



Fig. 1. The above radiograph shows the goiter occupying the greater part of the upper chest. The dark shadow to the left is a calcareous deposit the size of an egg (A). The dotted lines indicate the position of the trachea; the arrows are points of constriction. The aorta is seen in front of the goiter (B). When removed, the aorta and upper portions of the auricles were easily palpable.



Fig. 2. Similar to number one. This patient also developed pneumonia following removal, but made a good recovery.

**Operation.** The patient was given an H.M.C. No. 1. Three-quarters of an hour later he was placed on the operating table, in a semisitting position and operated on under local anesthesia, it being considered that any form of general anesthesia which relaxed his muscles might materially add to his respiratory embarrassment, as well as contribute to the development of a postoperative pneumonia.



Fig. 3. The specimen shown is the one removed from case number one. The smaller tumor is the calcareous nodule. The groove indicated by the arrow was occupied by the aorta.

The usual method of nerve blocking along the posterior border of the sternomastoid muscles and infiltration of the front of the neck was employed. No adrenalin was combined with the novocain, for the reason that adrenalin raises blood pressure and increases metabolism. This man's blood pressure was already too high and his heart damaged. For the above mentioned reasons I feel that adrenalin has no place in goiter surgery.

As is always the case in recurrent goiter surgery, considerable scar tissue and adhesions were encountered. I was unable to deliver the goiter in the neck until after it had been completely separated from all tracheal attachments. Following this, a finger was passed around the goiter to determine that no inflammatory adhesions existed. By placing several clamps on the upper border of the gland and having the patient cough, the tumor slipped out of the wound much like a forceps delivery of a baby's head over the perineum.

The separation of intrathoracic goiters from their tracheal attachments is the most important point in the technic of removal of intrathoracic goiters. This is not necessary in the majority of cases, as most of them deliver into the neck rather easily. Practically all will do so when freed from anatomic attachments. I have seen no case where it was necessary to divide the upper ribs or split the sternum.

There are, however, other technical points of interest and importance in dealing with substernal goiters. The control of bleeding, except as the result of inflammatory adhesions is, as a rule, not greatly different from ordinary cervical goiters. One would think that the location of the thyroid vessels, particularly the inferior thyroid artery, might be

greatly distorted but such is not the case. In separating the gland from the trachea, one must necessarily divide the main branches of both the superior and inferior thyroid arteries. This being done, the question of bleeding is largely passed. This is always much more easily done by starting at the isthmus and passing outward, just within the posterior capsule of the gland.

Recurrent nerve injuries must be avoided, as this complication may be immediately very serious or later very embarrassing. Recurrent paralyses are more often associated with intrathoracic and substernal goiters than other types. Therefore, one should always know before hand by laryngoscopic examination, if both vocal cords are normal and active. The tone of the voice is not a reliable guide in determining this, as some patients will have a recurrent paralysis without a history of a change of voice; others will have a change of voice, due frequently to tracheal pressure without injury to a recurrent nerve. The nerve is frequently displaced in substernal goiter, as the goiters often occupy a position lying partially between the trachea and esophagus. This is the normal location of the nerve in the lower part of the neck. Higher up it occupies a slightly more anterior position, where it enters the larynx on its lateral wall above the cricoid cartilage. When recurrent paralysis exists from pressure, it is not always found on the same side with the goiter. Occasionally it happens that the paralyzed nerve is on the side opposite the goiter. In such a case it is of greatest importance to avoid injury to the functioning nerve.

Injury to one recurrent nerve is not a matter of such vital importance, as when one nerve is injured, the vocal cord on the injured side usually assumes the midline position and phonation is carried on in a fairly satisfactory manner by the remaining active cord. The voice may be husky or even a whisper for a while, but at the end of a few weeks or a few months, the voice will usually return to a fairly satisfactory degree. Injury to both recurrent nerves, however, is a very different matter. If it does not result in a tragedy on the operating table, it is sure to be a source of endless grief in the future. As stated earlier, when the nerve is injured, the cord supplied by it usually assumes the midline position, due to the fact that the adductor muscle of the cord is stronger than the abductor. If this happens to both cords, a diaphragm is created in the larynx, which completely blocks respiration, demanding immediate tracheotomy. Occasionally it happens that,

following an injury to a recurrent nerve, the vocal cord assumes what is known as the cadaveric position, a semirelaxed position. If both cords assume this position, there is an elliptical opening between them that permits respiration to be carried on. The voice, however, is completely lost in this condition. Phonation may begin to return in a few weeks but along with it dyspnea develops and increases as the voice improves. The improvement in the voice is the result of tautness of the cords which were semirelaxed at first but now becoming more taut. The borders, instead of forming an arc, become more nearly straight and like shutters close the opening in the larynx, obstructing respiration. This condition necessitates a permanent tracheotomy, accompanied by its unpleasantness and loss of the voice.

One cannot complete a discussion of double recurrent nerve injury without introducing the subject of tracheal collapse. This has been the bugaboo in dealing with substernal goiters and others causing tracheal pressure. I believe it to be more of a mental than an actual hazard. I have never seen the trachea collapse, even where the rings of the trachea were bent and distorted from long standing pressure. I have seen a number of cases, when the trachea was sabre-shaped from bilateral pressure, others where it was bent or angulated, and in every instance, when the pressure was released, the trachea assumed its normal cylindrical shape. It is now believed that tracheal collapse does not occur or at least seldom occurs, except as the result of double recurrent nerve injury with blocking of the larynx, and that it is the result of atmospheric pressure, following a partial vacuum created in the trachea by inspiratory effort. The probabilities are that in the future surgeons will be more reluctant to admit they have encountered this condition, as it will likely fall in the same category as admitting that one has an aortic aneurysm.

I have preferred to discuss the etiology of this condition later than its usual first consideration. Complete intrathoracic goiters are usually encountered in the aged. I have seen none younger than 40, and the majority have been past 60. The usual explanations for their occurrence are based on misplaced thyroid tissue, and the crowding downward of an adenoma in the lower pole by other adenomata above. I am inclined to believe that they occur more often as the result of physical and anatomic factors rather than abnormally situated thyroid tissues. They occur most frequently in the short-

necked, low-statured types. In these individuals the thyroid is normally situated more nearly behind the sternoclavicular junctions than in the slender types. Second, as age advances, people are more inclined to become stooped and carry the neck flexed and the chin lowered, which displaces the thyroid downward. A third factor is that long repeated flexions of the chin on to the chest gradually pushes the goiter downward. Once it has passed the narrow thoracic strait, it finds less resistance in the thoracic cavity than in the neck.

A case which well illustrates this point came into my office several years ago. An elderly gentleman gave the following history: Twenty years ago he had a large goiter. One day he read an advertisement of a remedy that was guaranteed to cure goiter. He secured the medicine and began taking it. Not long after this his goiter suddenly went away. He had been telling that story and praising that remedy for twenty years. An x-ray photograph showed a huge intrathoracic goiter. What actually happened was this. Coincident with taking this wonderful remedy he had unconsciously forced that goiter past the thoracic strait into his chest, where it remained for twenty years. The x-ray punctured his story; the old gentleman acted peeved, left and never returned. I might add, as an item of interest, that he refused to pay for the x-ray.

It is an interesting fact that 75 or 80 per cent of all intrathoracic goiters spring from the left lobe of the thyroid. This is presumably due to the difference in anatomy of the great vessels springing from the aorta-innominate artery on the right, subclavian and common carotid on the left. The innominate artery arises in the midline or slightly to the left of the midline and passes upward and to the right, giving off the right common carotid which passes closer to the lower border of the right lobe than does the carotid on the left side.

Another interesting type of intrathoracic goiter is called "wandering or diving" goiter. The French have termed it "goitre plongeant." Usually it rests in the thoracic cavity but may be forced up in the neck at will by coughing. A few days ago I saw a man who had been operated on seven years ago for goiter, and who has at present no visible goiter, but when he coughs an adenoma the size of an orange pops up into his neck. It was interesting to place this man in front of a fluoroscope and watch this goiter shift from his chest, up into his neck, then back again.

The fluoroscope and roentgenogram are inval-

able aids to the diagnosis of intrathoracic goiter. The conditions to be differentiated are mediastinal tumors, aortic aneurysms and Hodgkin's disease. Mediastinal tumors and glands are fixed as a rule, widest in the center, and narrow both upward and downward. Often their borders are irregular. The trachea usually remains in the midline. Aneurysms show pulsation under fluoroscopic examination, are widest below and become narrower above. In intrathoracic goiter the shadow is widest above, and tapers downward. Coughing and swallowing displace it upward. The trachea is usually narrowed and deflected to one side, usually the right. The esophagus often follows the same course and is visualized by swallowing barium mixture.

Returning to the case being reported. The patient developed a bronchopneumonia in the right upper lobe the day following operation. The iodoform packing was removed from the mediastinum on the second and third days. A week later bronchopneumonia appeared in the left lung. After a rather stormy convalescence, he recovered and has gained considerable weight. He now has a systolic pressure of 180, diastolic 96, and is able to carry on very well.

Pneumonia is a far more frequent postoperative complication of intrathoracic goiter than of cervical goiter, probably due to a difference in the average ages of the patients and to intrathoracic manipulation.

## GLIOMA OF BRAIN\*

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Case 1. Tumor of the optichthalmus and frontal cortex. This patient, Mr. G. J., was admitted to Providence Hospital on December 6, 1924, and was referred to me by Dr. Lyons. He was a laborer, 33 years of age.

*Past history:* No serious illnesses. Had an appendectomy in 1914.

*Chief complaint:* Duration about one year; began with a cold followed by aching in legs, cough, night sweats; followed by pain in epigastric region radiating through to back; relieved by eating; attacks came on about an hour and a half after meals. Stomach pain ceased one month ago; now has been eating so little that he does not know if full meal would bring on pain. In August had five epileptic seizures, then no return until one month ago when he had five more in one day; passed urine in one of them; no aura; does not know where convulsions start. During the past month he had continuous headache in frontal region and in occiput; keeps him awake at night; vertigo at times and double vision for the past two months. Has difficulty in walking due to weakness in legs; thinks he has lost about 40 lbs. in weight during the past year. Memory is very poor and talking is difficult at times. In vertigo the tendency is to fall to the left.

*Examination:* Patient slow in cerebration although he seems to know where he is, who he is, his brothers, etc. Answers questions with marked hesitancy of

\* Read before a Meeting of Seattle Surgical Society.

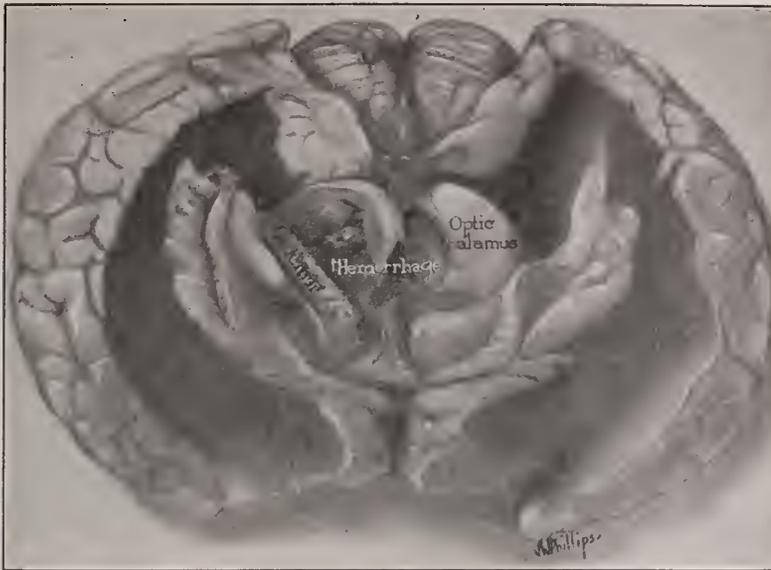


Fig. 1. (Case 1.) Glioma of right frontal lobe, subcortical glioma of the right optichthalmus. Hemispheres sectioned mesial anteroposteriorly. Thalmi sectioned to show extent of tumor mass.

speech. Cranial nerves: First, normal; second, double choked disc; third, fourth and sixth, no paralysis of ocular muscles; fifth and seventh normal; eighth vertigo with falling backward; ninth, tenth, eleventh and twelfth normal. Nystagmus: On looking to the right slight; none upward, none downward, none to the left. Pointing: Pastpoints with left hand slightly to the right; a little wobbly in movements of precision of left hand, also left leg. Reflexes: Frontal, mental, arms, knee and ankle kicks normal (motor). Babinski negative. A clonus of the right leg. Plantar reflex, cremasteric reflex, abdominal reflexes all markedly increased on both sides. Stroking of left plantar causes crossed clonus, but not Babinski (thalamic). Falling: Patient falls backward with eyes closed.

With the above neurologic findings it was decided to use air for the purpose of localization. The x-rays showed an obstruction to the entrance of the fourth ventricle or aqueduct. After the patient returned from the surgery he sank into a stupor and it was decided to operate to relieve the pressure. A decompression operation over the right temporal area was decided upon as the most expedient operation, which would, if possible, permit future localization after the brain returned to somewhat the normal condition. This was done using a general anesthetic. He did not recover from his stupor; respiration became more and more difficult and he expired at midnight.

*Autopsy report:* Calvarium removed; dura opened and brain removed.

*Examination of the brain:* In the right temporal region the hernia from the decompression operation shows clearly; about one inch in front of this region is a dark colored area, the site of a small tumor, the size of one's thumb, circumscribed but rather soft. There seems to be a mass felt also over the region of the posterior lobe, about in the position of the right optichthalmus.

*Section:* Left hemisphere normal. Ventricles: Both lateral ventricles enormously distended, the fluid being the embalming fluid. The right optichthalmus twice the normal size; the posterior half consists of a large infiltrating tumor; this caused

the pressure over the aqueduct and shows a thickening of the blood vessel system at this point. There has been a hemorrhage into the third ventricle, the hemorrhage extending from the gliomatous mass. The tumor in the anterior cortex seems to be circumscribed and the size of a walnut.

*Diagnosis:* (1) Tumor, glioma, right frontal lobe. (2) Tumor, glioma, right optichthalmus. (3) Internal hydrocephalus from occlusion of the aqueduct of Sylvius.

#### SUMMARY

From the examination, the operative findings and the autopsy one must conclude that this is a case of glioma of the optichthalmus and right frontal lobe. The thalamic syndrome was not present in this case except a crossed plantar irritation. The mental

disturbance of the higher centers undoubtedly was due to the tumor in the right frontal lobe and the sensory disturbance due to the tumor of the right optichthalmus. The absence of ocular findings, especially visual field changes, is significant in this case and cannot be explained except that one may have a fairly large tumor of the optichthalmus without direct pressure on the optic tracts.

Death was undoubtedly due to the hemorrhage into the third ventricle. The relief of pressure by the use of air seems to have hastened his collapse, although the pressure in the spinal canal, 14 mm., shows that the ventricles were not drained at that time. The fluid probably was taken from the cisterna only and as collapse did not immediately follow the use of air it probably was a very slight factor in this case. The tilting of the ventricle upward was noted prior to operation and commented upon. The double nature of the tumor was not considered, although it should have been in this case.

#### Case 2. Tumor of the optichthalmus.

This case presents exactly the same picture except the frontal lobe cortical involvement, namely, a glioma of the optichthalmus. The history, however, is entirely different.

This young man was seventeen years of age and in perfect health on the morning of his death. He was sitting at breakfast with his family when the telephone rang and he answered it. When he returned and sat down at the table without any warning, he grasped his head between his hands and told his mother he had an excruciating pain; he fell forward on the table and became unconscious within a few

moments. He died within a few hours. The symptoms were those typical of a hemorrhage into the lateral ventricle—purple face, stertorous breathing and intense congestion of the whole body. The autopsy revealed the true cause of death, as shown in the illustration.

*Autopsy report:* Calvarium removed; dura opened; brain removed. The skull was very thin, especially over both parietal prominences where it was not over one-eighth inch in thickness, and in the frontal and occipital regions the skull was not over one-fourth inch in thickness. Convulsions of the brain outlined on the inner surface of the skull; the dura was everywhere thinned to a parchment-like thinness; it was adherent to the skull especially at the base. On being reflected from the gasserian ganglion, the ganglia were found to be flattened into ribbons; the pituitary of normal thickness and appearance; no evidence of disease of the sinuses, mastoids or of the venous sinuses. The brain was flattened over the entire cortex, the convulsions being practically obliterated.

On examination the base of the brain showed a hemorrhage about the optic chiasm, posteriorly; the hemorrhage evidently coming out from the foramen of Magendie and Luschka. Section of the brain, mesial, revealed a moderate thickness of the cortex; the corpus callosum normal in appearance. On opening the ventricles a fresh blood clot was found in both ventricles, about the same degree in each, perhaps a bit more in the right than the left; in pressing the blood clot through the foramen of Monro, exposing the third ventricle and separating the optichalami, the point of origin of the hemorrhage was found to be the right optichalamus. On sectioning the right optichalamus a tumor mass the size of a hen's egg was found, into which a hemorrhage had occurred which caused death.

*Diagnosis:* Glioma optichalamus right; hemorrhage ventricle right.

#### SUMMARY

The absence of prodromal symptoms in this case cannot be explained. The hemorrhage, of course, was the cause of the sudden pain with loss of consciousness; the ventricular hemorrhage caused the intense cyanosis; the locality of the hemorrhage accounts for the extreme temperature, but why such intense intracranial pressure did not cause headaches, nausea, vomiting and sensory disturbances on the opposite side of the body cannot be explained.

This case did not have air injected, nor was there a decompression operation as in the first case. The tumor probably was not as large, but the hemorrhage was much more severe. The lack of symptoms in this case undoubtedly suggests the possibility of fairly large gliomatous growths before actual symptoms develop.



Fig. 2. (Case 2.) Glioma of right optic thalamus. Both hemispheres split mesial anteroposteriorly. Right optic thalamus sectioned to show extent of tumor mass.

*Case 3.* A man, 42 years of age, who was referred to me by Dr. McCreery of Tacoma with the following history: Had measles when a child. Bulging of costal cartilage of the left side of chest, evidently rachitic. Aug. 25, 1923, acute appendicitis, white blood count 17,000, polymorphonuclears 80 per cent. Had appendectomy and repair of right inguinal hernia, which he had had for fourteen years.

*Present complaint:* Patient first consulted me Aug. 11, 1924, for slight numbness and weakness in the left arm and muscles of the left side of the face. There was present a slight sagging of the left facial muscles and slight weakness of the left arm and hand. At that time a blood Wassermann was negative. Oct. 21 he complained of twitching of the left facial muscles and a tingling sensation in the left arm. Lumbar puncture showed a cell count of 18; negative Wassermann; globulin slightly positive. Luminal at night time controlled the twitching in a large measure. I was away and did not see him for several months.

I saw him again the middle of January, 1925, and thought there was a slight improvement in his condition. During all this period he had been taking potassium iodid in varied doses, and had been doing some dental work at intervals. At one time he reported that he had been drinking six cups of coffee daily. He continued work until the first part of March. There was slight atrophy of the muscles of the left arm with a slight incoordination. The latter part of February headache appeared as a symptom; this headache was more severe early in the morning. On March 7 he had a severe epileptiform attack, and from his wife's description, I think this was a general convulsion. The tongue was bitten, and following this attack he has had marked increase in loss of power of the left side. He has been confined to his bed and the headaches have become more severe, with pain in the left ear.

On March 13 a lumbar puncture was done with some relief to the headache, the manometer pressure being 22 mm. of mercury. X-ray findings are suggestive of brain tumor. Dr. W. G. Cameron examined his eye grounds in November and again in March and reports the absence of choked disc.

This patient was seen in the Virginia Mason Hospital and the diagnosis of a tumor of the brain occurred in. He was getting gradually worse but his eyes did not show choked disc; in fact, there was merely a filling defect present. There was no question regarding the fact that the man had a tumor, but it was decided to use air for purposes of localization. While it was believed that the tumor was well forward because of the convulsion, there was a possibility that it might be a deep-seated lesion, or in the posterior lobe.

Air was used, being injected in the spine in small amounts. The spinal pressure was 30 mm. The air went in easily; there was no shock; the x-rays revealed the presence of air on the left side only. The left ventricle was widely dilated and displaced to the left of the mid-line, showing that there was a large tumor mass on the right side and, as the foramen of Monro was occluded apparently, the tumor was in the right frontal region.

It was decided to wait a few days before operating as the patient's wife was in the hospital about to be confined and his condition did not seem to warrant immediate operation. On the afternoon of the fifth day the patient had a severe convulsion, similar to the ones he had had preceding his admission to the hospital. The convulsion lasted, however, for thirty minutes and then was followed by repeated convulsions.

The diagnosis of a hemorrhage into a glioma was made and it was decided to operate at once. This was done, a large bone flap being turned down and the dura opened, revealing a large tumor mass in the posterior frontal region on the right side. The mass was palpable and soft and on puncture was found to be filled with a large clot of blood. This was removed and a drain inserted, the wound closed and the patient returned to his room. He did not rally, however, and died that night. No autopsy was obtained.

#### SUMMARY

This case presents some interesting points. In the first place, epilepsy was present in this case, the same as in case 1, but coming on in a man around forty years of age with no history of prior attacks. Both of these cases had a weakness of one side; one had choked disc to a marked degree, while the other had merely a filling defect of the optic nerve; both were gliomas. Case 2, having the same anatomic lesion, presented no symptoms prior to the symptoms of hemorrhage. The ordinary thalamic syndrome was not present in any of the three cases, except to a partial degree in case 1, whereas the glioma tendencies were present in all three, that is, a well developed, fairly large tumor which did not present any symptoms until the terminal episode. The choked disc was absent in case 3, which would suggest that the general edema of the brain had not reached the point where it dammed up the return venous blood from the eyes, whereas in case 1 the edema had reached that point.

Have we no other symptom that would corroborate this statement? Case 1 was not mentally as alert as case 3. He was very slow in his mental processes, which may have been due either to the

tumor of the frontal cortex or to the general edema. The air was used in the later stage in both cases 1 and 3, and thus did not do any damage. It was not used at all in case 2, but sudden death resulted from a hemorrhage, probably into the glioma and thence into the lateral ventricle.

The final conclusions on these three cases, then, would be (1) that gliomas develop frequently in the region of the optichthalmus. (2) They do not cause symptoms until rather late in the progress of the disease. (3) Choked disc is a terminal finding and means general edema of the brain. (4) Hemorrhages are likely to occur at any time during the course of a glioma and consequently death is very sudden.

### GASTROINTESTINAL REPORTS\*

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#### CARCINOMATOUS ULCERS OF STOMACH

P. G. P., male, white, age 30. Family history negative.

Past history, no serious illnesses, except influenza. Was four and one-half years in the Canadian army in France and had a serious shell wound of the back and shoulder. Until present illness, had been strong and active.

*Stomach trouble.* He dates the onset to a day three years ago, when after drinking much ice water, he developed a pain in his epigastrium, followed by vomiting. Following this, the trouble returned daily for about six weeks. Pain was severe, boring or deep burning in character high in the epigastrium and substernal region. It came on very regularly one and one-half hours after meals. Increased in severity for an hour or so, when he would vomit with resulting relief. Vomitus was usually a small amount of very sour fluid. There was considerable eructation of gas. Appetite was good. He consulted a doctor, who put him on a soft diet.

He often had pain and belching of gas at night. Incomplete, brief relief from eating. He continued to work, and except for the stomach trouble, felt fairly well. The second attack came on about a year after the first. He received treatment sooner and it lasted four weeks.

*Present attack.* Started with symptoms similar to other attacks, but has continued in spite of treatment for three months. There has been some gradual change in the symptoms. Pain is more severe, and is often bad at night and prevents sleep. Vomiting is less frequent and there is a larger amount vomited. Vomiting gives some relief but pain soon returns. Appetite is poor and he is afraid to eat. Belches large quantities of gas, especially on getting up in the morning. Recently has taken only liquid foods. He has steadily lost weight and strength. Has never had fainting or weak spells. On one occasion noticed a small amount of blood in the stool.

*Examination* shows a small, thin and pale man. Weight 115 pounds, formerly 125. Skin is smooth and slightly dry. Mucous membrane moderately pale. Sclerae slightly icteric. Teeth: upper teeth out, lower teeth in fairly good condition. Some palpable

\* Read before a Meeting of Seattle Surgical Society.



Fig. 1. Before operation. (Radiogram is reversed.) A, duodenal cap. B, dilated stomach. C, ulcers on lesser curvature.



Fig. 2. After operation. Shows small stomach, comprising part of fundus, attached to jejunum.

cervical glands. Reflexes are normal. Gait normal, no ataxia. Romberg normal. Pupils normal. Lungs clear. Heart not enlarged. No murmur. Blood pressure; systolic, 130, diastolic 76. Abdomen is not distended. There is moderate tenderness in the epigastrium.

*Fluoroscopic examination.* Lungs are clear. Heart not enlarged. Esophagus normal. Stomach large and saccular. In upright position the greater curvature reaches almost to the pubic arch. For five

minutes the stomach is inert, then active peristalsis. Barium passes quickly through a rather narrow pylorus. There is an irregular filling defect in the lesser curvature. Duodenal cap fills well and shows no deformity. In six hours there is a 50 per cent residue in the stomach. The rest of the meal is scattered between the stomach and the descending colon. Descending colon is moderately spastic.

*Laboratory.* After test breakfast gastric analysis showed free HCl 37, total 60. Urine was normal. Wassermann negative. Blood count: Reds 4,200,000, whites, 9,100. Stools showed occult blood.

*Diagnosis.* The diagnosis in this case is plainly between gastric ulcer and carcinoma. The early history is typical of ulcer of the stomach, but points that indicate malignancy are: (1) Present attack has not responded to diet. (2) Increased pain, loss of appetite. (3) Signs of dilatation, such as vomiting large quantities and belching. (4) Loss of weight.

These, with the x-ray demonstration of a distinct defect of considerable size in the lesser curvature and the finding of blood in the stools after prolonged dieting and alkalis, point rather positively to carcinomatous change, in spite of his age and the high acid findings. This was explained to the patient and immediate operation advised.

*Operation.* Minor Hospital, September 1, 1925. The operation was performed under local anesthesia, using one-half per cent novocaine solution after a preliminary hypodermic. We had no difficulty, and there was no discomfort to the patient.

The abdomen was opened and the contents inspected. No evidence of metastasis was found. The stomach was large. No mass was found, but two moderately indurated flat ulcers were felt in the posterior wall near the lesser curvature. A resection of rather more than half of the stomach, including most of the lesser curvature, was done. The upper jejunum was brought up anterior to the colon and united to the end of the stomach, following Balfour's modification of the Polya operation.

Examination of the specimen showed two large flat punched-out ulcers on the posterior wall, one-half to one inch below the upper border of the ulcer floors are smooth or finely granular. The edges, however, are thickened and slightly undermined, strongly suggestive of malignant change.

The laboratory diagnosis was adenocarcinoma, bulky, papillary type, without demonstrable inversion of the muscularis. Inflammatory infiltration cultures show staphylococcus.

The x-ray pictures show the stomach before and after the operation (figs. 1 and 2). Recovery from the operation was in every way satisfactory. In fact, from that time there has been entire absence of gastric symptoms, and he has steadily gained in weight.

#### INTESTINAL FISTULA

Case 1. C. P., male, age 22. Family and past history unimportant.

About three years ago, while on board a ship going to the Orient, he had an attack of appendicitis. On reaching Japan, six days after onset, he was

operated on at the Naval Hospital and an appendiceal abscess drained. He remained in the hospital some time and then was sent back to the United States with the wound still draining pus and fecal material. He was at the Marine Hospital in this country for several months. He was then operated on in Seattle, the fistulous tract traced to the cecum and repair done. It remained closed for six months and then broke out with profuse fecal drainage. Since that time he has had a fetid discharge except at brief intervals when it closed, and four different operations have been done without permanent success.

At present he is a fairly well nourished young man and presents nothing unusual except the abdominal condition. The lower right quadrant of his abdomen is extensively scarred, showing the marks of numerous incisions. Well to the outer side is the fistulous opening, discharging much thick creamy pus with a fetid odor, and also fecal material. The tract communicates with the cecum.

On July 9, 1925, I operated on him at City Hospital, assisted by Drs. Cohn and Weinzerl. I decided not to follow the common method of making an elliptical incision around the opening and following the tract down. Instead I made my incision well to the inside of the scarred area, entering the free peritoneal cavity. The cecum was located, and after protecting the general peritoneal cavity, was mobilized by sharp dissection. About an inch of the appendix remained and was removed. About an inch above this was the fistulous opening into the cecum and we were able to dissect this free until we had a tube extending from the cecum to the surface of the abdominal wall. It was then possible to clamp off the tract and close the cecal opening according to surgical principles, in a way that rendered it reasonably certain of a good result. A secondary tract was found, extending back of the cecum to a small opening in that part of the abdominal wall. This led to a retroperitoneal pocket, containing several ounces of creamy foul-smelling pus. The opening was enlarged, the tract dissected out and a drainage tube passed through the old fistulous opening into the cavity. The abdominal incision was then completely closed.

The recovery was very satisfactory, the tube being removed in a week and the patient discharged in three weeks. He has been entirely well since.

Case 2. Mrs. O. W., age 41. History preceding the present trouble is negative.

First operation, in 1921. Was operated upon for appendicitis, but she says an abscess of the tube was found. Following this she drained for three months. It then closed.

Second operation, April, 1921. On account of pain and soreness, the second operation was performed and drainage instituted. Following that, drainage persisted intermittently.

Third operation, in 1923. Following attack of pain, soreness, and swelling in the lower abdomen, was operated upon and again drained.

Fourth operation, December, 1923, a similar operation.

Fifth operation, February 20, 1924. Laparotomy was done and both tubes removed. Following this, the wound did not close, and more or less continuous discharge of pus and fecal material persisted.

Sixth operation, July, 1924. Had much pain, pressure, and irritation of the bladder. The abdomen was again opened. There has been fecal drainage since that time.

A few weeks ago she went to Dr. Carruthers in Ketchikan, who injected the opening with bismuth paste, resulting in its closure for a few weeks, when it again opened. Dr. Carruthers kindly referred the case to me.

Patient's general health is good. She is well nourished, and has no complaints outside of the inconvenience resulting from this fistula. Menstruation is regular. No urinary disturbances. Bowels are normal. She has no indigestion.

*Examination* shows nothing abnormal except in relation to her abdomen. The entire abdomen below the level of the umbilicus is an irregular depressed mass of scar tissue. About the center of this is a large irritated opening, from which is discharged pus and fecal material. A large, hard, irregular mass can be felt in the suprapubic region. Bimanual examination determines that this mass is intimately connected with the uterus and anterior abdominal wall. The cul de sac is obliterated. In fact, the entire true pelvis is filled with this fixed, hard and moderately tender mass.

Seventh operation, Jan. 28, 1925, at Minor Hospital. The abdomen was opened by an incision, extending from the umbilicus to the pubes and to one side of the fistula. The uterus and the mass of scar tissue in which it was inclosed were firmly adherent to the abdominal wall. Included in this mass were many loops of intestine. Careful sharp dissection was done, until the uterus and the intestinal loops were separated. The fistulous tract was followed down deep into the cul de sac, where it was found to enter a loop of small intestine. The greater part of the wall of this loop was so densely indurated that a resection of a portion of it, with end to end anastomosis, was necessary. A cigarette drain was inserted and the abdomen was closed.

*Comment.* From the amount of dissection necessary, I expected considerable postoperative reaction, but was agreeably surprised by an uncomplicated convalescence and a complete recovery.

Case 3. About five months ago this patient had a gunshot wound penetrating the abdomen and chest. This resulted in a suppurative peritonitis and empyema. Drainage in the abdomen resulted in much destruction of the abdominal wall, an intestinal fistula and an empyema. He has been in City Hospital for five months running an irregular temperature and has had several operations. There is still drainage from the pleural cavity and he expectorates much pus. He is a large man and is still fairly well nourished.

The abdomen is large. About the middle is a large area eight by ten inches of granulation tissue, in the lower half of which is an opening into the small intestine, from which considerable fecal material drains. This area is free from skin except where a few small pin grafts have taken hold. The abdominal wall here is so thin that peristalsis is visible and on sitting or standing a very large hernia is evident.

*Operation.* Owing to the presence of suppuration in the chest, we had decided to attempt the repair under novocaine anesthesia. The tissues around the area are infiltrated with one-half per cent novocaine solution. A pad saturated with mercurchrome solution is placed over the granulation area and fistula.

A long incision is then made in healthy skin, well to one side, down to the fascia. Towels are closely clamped to the incision edges so that sterile drapes cover everything except the incision, which is carried on into the abdomen. The thin wall is then undermined and separated from the viscera by sharp dissection until the fistulous tract is reached. The involved loop of small intestine is dissected free and the opening closed transversely by two rows of chromic catgut. The dissection is continued, the upper infected surface being rolled back and never

visible, until healthy tissue is reached on the opposite side. This entire area of wall is then removed with the attached towels. Fortunately the abdominal walls are rather loose from loss of weight and we are able to bring the edges together, the thickened peritoneum and posterior layer of the rectus muscle by heavy catgut mattress sutures, and then layer by layer, sutured with tension sutures of silkworm gut. A small rubber tissue drain was placed at each end to the fascia. He had some drainage of pyocyanous pus, but healing was prompt and he has a firm abdominal wall.

#### COMMENT

The development of fecal fistula after an abdominal operation is not only disconcerting and troublesome to the surgeon but fills the patient with dismay and anxiety. Experienced surgeons are slow to operate on these cases, and very properly try every other means to effect a closure. Fortunately, many of them close either spontaneously or with the help of simple procedures, such as cauterizing, curetting or injection with bismuth paste or other material. If spontaneous closure fails, the condition, with its irritation of the skin, foul odor and other disagreeable symptoms, causes the patient to become discouraged and depressed. Unsuccessful operations are extremely disappointing to both surgeon and patient. Two of these patients were really desperate on account of the many unsuccessful operations. It, therefore, requires the best surgical judgment and careful study of each case before deciding on the operative procedure.

In a general way, it may be said that there are two methods of approach in these cases. (1) Attempting to follow the tract from the external opening. (2) Opening the abdomen at some distance from this opening, locating the opening into the bowel, and working from that point.

The first method has advantages: (1) Often a simpler procedure. (2) General peritoneal cavity is not invaded. (3) Can be done under conditions that might not warrant opening the abdominal cavity.

Disadvantages: (1) It is often difficult to follow the tract without cutting into it. (2) Proper exposure is often impossible. (3) It is usually impossible to do proper intestinal repair and success is uncertain. (4) Portions of the tract or infected tissues may be left and cause recurrent trouble.

Cases in which the small intestine is close to the abdominal wall, like a therapeutic enterostomy, may often be well handled by this method, while, on the other hand, long narrow tracts are also liable to remain closed. The approach from the peritoneal cavity is the most satisfactory method in most cases, especially in such as here reported on, that have had repeated unsuccessful operations.

## MINOR SURGERY\*

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The surgical procedures instituted on the three patients who are presented are classed as minor surgery.

#### HEMORRHOIDS

The first is a case of internal and external hemorrhoids. We have for some years performed this operation with anesthesia by local infiltration around the anus. This requires but one needle puncture, as is seen by reference to fig. 1, B. The patient is ready for operation when the sphincter becomes completely relaxed (fig. 1, C). Before the injection we paint around the bases of the external tags with mercurochrome solution, because after the injection they become so distorted that it is difficult to find their original bases (fig. 1, A and B).

*Operation.* The operation is performed with the patient lying face down with a pillow under the hips. A Buie pile clamp is applied to each pile which is to be removed. The pile is cut away and its base closed by a running suture over the clamp. The clamp is then removed and the ends of the suture tied. The external tags are cut away and sutured with interrupted chromic gut (fig. 1, C). Sensation begins to return after local infiltration in about thirty-five minutes. This is first noted by a return of tone in the sphincter muscle.

A brief description of the nerves, lymphatics and blood supply of the rectum may not be out of place.

The nerve supply includes both sympathetic and cerebrospinal fibers. The former are derived from the inferior mesenteric and pelvic plexuses and accompany the hemorrhoidal arteries. The cerebrospinal nerves are contributed by the second, third and fourth sacral nerves.

Its blood supply is from the superior, middle and inferior hemorrhoidal arteries of each side and from the middle sacral. These arteries are not large, but unless hemostasis is complete, hemorrhage is sometimes alarming. The veins are of the same name, the chief point of interest being that the superior and middle hemorrhoidal veins empty into the portal circulation, whereas the inferior hemorrhoidal empty into the internal iliac, a tributary of the vena cava.

The principal lymphatics of the rectum, after joining the lymph nodes along the superior hemorrhoidal vessels, pass to the sacral glands on the front of the sacrum. In the lower portion of the bowel there is present a very rich plexus under the skin, around the anus, which drains into the superior internal inguinal glands.

\* Read before a Meeting of Seattle Surgical Society.



Fig. 1. A, before injection, showing external tags painted with mercurochrome solution. B, showing injection from above with one needle puncture. C, com-

plete relaxation. D, completed operation, showing sutures and return of action of sphincter muscle.

EPIGASTRIC HERNIA

The second case is one of epigastric hernia, which is a small protrusion of subperitoneal fat through the linea alba, usually midway between the umbilicus and the ensiform cartilage (fig. 2, A). These hernias are very painful in individuals who are employed at heavy labor. In the act of lifting, the herniated tissues are pinched by the aponeurotic orifice. Some of the hernias are large enough to possess a peritoneal sac, but usually they are formed by fat from the falciform ligament.

*Operation.* The skin, fat and linea alba are blocked by infiltration anesthesia around the hernia, keeping at least 2.5 centimeters away from the hernia. A longitudinal incision is made. The hernia is exposed. The mass is carefully isolated as far as its pedicle. The linea alba surrounding the hernial orifice is exposed freely for one centimeter. The herniated tissues are then examined to make certain that a small portion of the transverse colon or stomach is not involved. Occasionally all that is needed is reduction of the fat, but it is usually necessary to tie the sac off at its base. The orifice is closed with a purse string suture of wax silk. The skin and fat are closed with one silkworm gut suture and four clips (fig. 2, B).

TRANSFUSION

The third case is one of pernicious anemia, in which transfusion is indicated. There are two important factors to be considered when a transfusion is found necessary: first, the selection of the donor and, second, the method of transfusion. I shall ask Mr. W. E. Gibb to tell you how our donors are selected.

(Mr. W. E. Gibb). The donors must be carefully selected. Strong, muscular men with prominent veins at the elbow make the best donors. Hemoglobin content of the blood and red cell count should be high. Clinical examination should exclude syphilis, tuberculosis and other communicable diseases.

As there are two methods of blood grouping commonly used by serologists, it is best to have the blood of the recipient and the blood of the donor tested in the same laboratory so as to guard against possibilities of error.

The two methods of blood grouping are Moss'

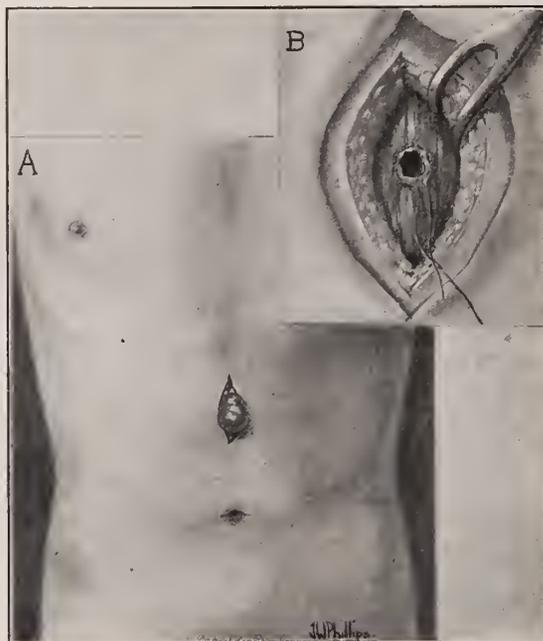


Fig. 2 A shows protrusion of subperitoneal fat. B shows details of operation.

and Jansky's. Each worker recognizes four groups. Jansky's group I corresponds to Moss' group IV (both classified as universal donors) and Jansky's group IV corresponds to Moss' group I. Groups II and III are identical in both. Whenever an individual's blood is grouped the method used should be recorded. We use Moss' method of classification. It is preferable to use donors who are in the same group as the patient. In cases of emergency, professional group IV (Moss') donors may be used. Usually no serious reactions occur in the recipient. When recipient and donor are in the same group, the red blood corpuscles and serum of the donor should be matched directly with the serum and red blood corpuscles of the recipient.

We have found, in a large series of transfusions for pernicious anemia, that very often the recipient

is in group III. Due to the fact that only 10 per cent of individuals are in group III, it is often impossible to find a donor in this group. Therefore, if the recipient is in group III it is often necessary to resort to the use of a group IV (Moss') donor. The reason for the absence of reaction in the recipient when using a universal donor is based upon the fact that the high dilution reached by the incompatible plasma during transfusion usually nullifies its toxic effect. Thus, universal donors may be used with a high degree of safety in cases of emergency.

*Technic.* The apparatus for the syringe method, which we use, consists of four 20 c.c. syringes, from

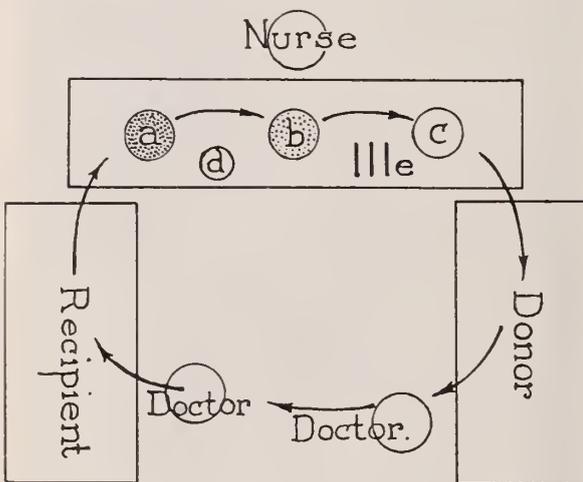


Fig. 3. a. Sodium citrate solution. b. Sterile water. c. Normal salt solution. d. Small basin with normal salt solution. Should there be any delay, this solution is used to inject into recipient's arm, clearing the needle of blood. e. Three 20 c.c. syringes, with caps removed from the backs.

which the nickel caps have been removed, two medium sized Unger needles, two small rubber constrictors and three basins of solution. The basin next to the recipient is filled with 2 per cent solution of sodium citrate. The middle basin is filled with distilled water. The basin next to the donor is filled with normal salt solution.

The donor and recipient are placed on parallel ward carriages about four feet apart. Blood is taken from the donor's right arm and injected into the recipient's left arm. The syringe is then handed to a nurse, who stands behind the table on which the basins are placed. The piston of the syringe is immediately pulled out (this is the reason the nickel cap is removed) and washed in turn in sodium citrate solution, distilled water and normal salt solution. The piston is then inserted and the syringe is ready for use again (fig. 3).

*Remarks.* The advantages of this technic of blood transfusion are as follows:

1. The method is simple.
2. There are no unusual devices which may get out of working order.
3. Veins can be used repeatedly.
4. Whole blood is used, without the addition of sodium citrate.
5. It is scarcely ever necessary to open a vessel.
6. The amount of blood to be given can be measured accurately.
7. When necessary this procedure can be performed at the bedside.

Blood transfusion by this method occasionally gives some reaction, but they have been much fewer than when we used the citrate method.

### CHRONIC SUPPURATIVE NEPHRITIS\*

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Case history, No. 11625; Mrs. E. E. R. The history is that of a female thirty-two years of age, married, who does her own housework. Her family history is negative. She gave a personal history of diphtheria at seventeen, otherwise there was nothing of importance. She has one child four years old, living and well. She had one therapeutic abortion because of hyperemesis gravidarum. She menstruated last three months ago.

Her symptoms started four months ago with renal colic, followed by cystitis. This apparently cleared up in about two weeks under medical treatment.

July 21 she had a severe attack of left renal colic, accompanied by fever and rigor, and since then she has been in severe pain, with considerable burning on urination. There was pus and blood in the urine. Her temperature was 103° at the time of consultation. She was sent to the hospital for cystoscopic examination. There was anorexia for several days. Her leucocyte count was 18,400, with hemoglobin of 58 per cent.

*Physical Examination.* The patient is undernourished, having lost forty-five pounds during the past three months. Nothing of importance was made out except in the region of the abdomen. The skin was striated with lineae albicantes. There was marked tenderness over the left kidney and along the course of the left ureter, with some fullness just above the symphysis, due to a three months pregnancy.

*Special Examination.* July 23, cystoscopy. Under local anesthesia (novocaine) a No. 24 Brown-Berger cystoscope was used. The mucous membrane of the bladder was negative, except for a slight hyperemia. The ureteral orifices were normal in appearance, and both ureters were catheterized. There was some difficulty in passing the catheter to the kidney on the left side, on account of an obstruction about fifteen centimeters from the ureterovesical orifice. Both specimens collected showed infection with the colon bacillus. The renal pelves were lavaged with one per cent mereurochrome solution, the right side taking two cubic centimeters, and twenty cubic centimeters being injected through the left catheter without producing any discomfort. Following this cystoscopy

\* Read before a Meeting of Seattle Surgical Society.

the patient had a comfortable night, and the following day her temperature dropped to normal. There was only slight tenderness on deep palpation over the left kidney the following morning. Two days later the patient was dismissed from the hospital very much improved (July 27).

August 10 the patient again had a severe attack of nausea and vomiting, with pain in the left side and a temperature ranging from 100° to 102°. She was readmitted to the hospital, and was given five per cent glucose solution intravenously and per rectum, nothing by mouth. This relieved her nausea and vomiting.

Two days later a second cystoscopy was done. This time a No. 5 catheter would not pass to the left renal pelvis, but was arrested about twenty centimeters from the ureteral orifice, while the catheter on the right side easily ascended to the kidney. A lavage with one per cent mercurochrome solution, using two cubic centimeters in each side, was repeated.

August 15 the patient's nausea and vomiting again occurred, and she had a temperature of 99.3°, with considerable discomfort in her left side. It was decided to do a therapeutic abortion. This was completed on the following day. Then the patient immediately began to feel better. A few days later she was able to eat anything, and her entire condition improved. She was dismissed from the hospital August 24.

After leaving the hospital and going home, the patient's general condition did not improve; if anything, she lost ground. Her temperature ranged from 100° to 102° each day, with a slow drop in the hemoglobin.

September 1 she had another cystoscopic examination and ureteral catheterization, with a divided function, but the catheter on the left side was arrested about twenty centimeters from the vesicoureteral orifice. At this time there was no secretion from the left kidney. The phenolsulphophtalein appeared in twenty minutes on the right side, and twenty-two and one-half per cent was collected in a twenty minute period. The left ureter was injected with a fifteen per cent sodium iodide solution for a pyelogram, but on examining the roentgenogram we found none of the fluid had gone into the renal pelvis, but all of it had passed into the bladder. A total phenolsulphophtalein test, September 9, showed sixty-seven per cent the first hour, and eighteen per cent the second hour. This was interpreted as being the function of the right kidney.

On September 10 the patient was readmitted to the hospital, and a left nephrectomy was performed the following day.

*Findings at Operation.* The upper pole of the kidney was free from adhesions, and the fascia stripped easily, but at the lower pole there were marked adhesions, holding the fascia to the renal tissue. Just below the kidney there was a large inflammatory mass which was gradually dissected and opened. An ounce of greenish pus escaped from the bottom of the cavity, as the finger separated some of the tissues. The ureter was then located by first severing some of the adhesions and finding the renal pelvis. This was followed downward. The thick carneous inflammatory process stripped from the ureter with considerable difficulty, and the ureter was surrounded with inflammatory tissue. The renal pelvis was then aspirated and the same thick greenish material that came from the cavity within the inflammatory mass came from the renal pelvis. At this point it was decided to do a nephrectomy. The ureter was then pulled up until a normal portion came into view, which was about four inches below the renal pelvis. It was clamped and doubly tied at this point. The kidney was easily brought into the wound, and the clamps were applied to the pedicle. The remainder of the operation is of no importance.

*Gross Pathology.* The kidney measured five by seven by twelve centimeters after being in formaldehyde. The capsule stripped easily excepting at the lower pole. The surface was nodular, due to cortical abscesses. There was an S shaped kink in the ureter just below the ureteropelvic junction, which interfered with the flow of urine. On section, the pelvis and calices were considerably dilated, and filled with purulent material. The margins of the calices were lined with "moth-eaten" necrotic materials, and immediately surrounding the calices was a large amount of fibrous tissue with many small pinpoint areas of necrosis. The cortex was compressed, and measured five millimeters; the normal striation was gone.

*Microscopic Study.* This shows a great deal of degenerated tissue with many areas of pus cells and round cell infiltration, some areas showing granulation tissue, and only a few tubules remain. Many of the glomeruli are totally destroyed, and the cavities are filled with pus cells. The capsule is thickened and shows areas of degeneration. A section of the ureter shows the epithelial lining in fairly good condition, while under this there is a marked round cell infiltration, and abscess formation.

*Diagnosis.* Chronic suppurative nephritis. (W. S. Griswold).

*Convalescence.* Nausea and vomiting for three days followed the nephrectomy. Six days later her temperature was normal, and remained so during her convalescence. The wound seemed to be entirely healed in three weeks, and the patient was dismissed from the hospital cured. Four weeks later a small abscess formed in the upper angle of the wound, which was drained and healed in a few days. The patient is now constantly gaining in weight and strength, and her hemoglobin is 75 per cent.

This history is being reported to illustrate the necessity of careful urinalysis and complete renal study, where a pyuria occurs. This case was diagnosed as a simple pyelitis, but a complete renal analysis revealed a serious renal lesion. The hyperemesis gravidarum very likely was caused by the renal lesion, instead of the pregnancy. When pregnancy is accompanied by fever, chills, pyuria and pain in the back, the clinical diagnosis is invariably pyelitis. If this condition does not clear up in a reasonable time, she should by all means be subjected to a renal study. Nephritic toxemia of pregnancy and chronic surgical lesions of the kidney do occur during the period of gestation, especially in the later months, when the maternal renal function is loaded to the limit. It is at this time that the function is apt to break down and the underlying pathology comes to light.

## INGUINAL HERNIA\*

R. D. FORBES, M.D.

SEATTLE, WASH.

Mr. I. T., age 16, was admitted to Columbus Hospital, October 17, 1925, with a tentative diagnosis of strangulated inguinal hernia. He gave the usual history of having had a swelling in the inguinal region since childhood. This swelling was reducible

\* Read before a Meeting of Seattle Surgical Society.

and disappeared when lying down. Six hours before admission, however, the swelling suddenly became larger and painful and efforts at reduction were unsuccessful. He was not nauseated.

Physical examination showed the patient to be in good general health, free from congenital deformities and any apparent swelling in the left inguinal region. In the right inguinal region a swelling of moderate size was present, tender on palpation and dull on percussion. The swelling could be traced upward into the abdomen and was considered, partly on account of the absence of gastric or intestinal disturbance, to be due to strangulated omentum.

Operation was carried out under local anesthesia and was free from pain or discomfort. A four inch incision through the skin readily exposed the swelling below the external ring. The aponeurosis was then divided, scrupulous care being exercised in the preservation of the underlying nerves. The sac was easily identified near its neck and on incision exposed a portion of omentum which had become strangulated. This was removed by ligature and examination made for other pathology before closing the sac. The finger was inserted through the internal ring and the absence of another sac noted. The conjoined tendon and the transversalis fascia underlying it were felt to give solid support to that portion of the inguinal triangle. The sac was then closed by suture and the region of the cord examined for the presence of a hydrocele connected with the remnant of sac. The internal ring was found to be well formed, though larger than normal.

In a boy of this age with well developed tissues, it was not considered necessary to transplant the cord so that only one suture was employed in deep closure, in order to lessen the size of the internal ring. This was passed through Poupart's ligament below and the transversalis fascia above and on the inner side. The gentle tying of this suture seemed to give the proper support. The aponeurosis of the external oblique was closed by interrupted silk sutures.

#### COMMENT

The features of this operation have been the following:

1. The use of local anesthesia. Its advantages are obvious and it is used by preference almost universally.

2. The avoidance of injury to important structures. Every effort must always be made to preserve intact the ilioinguinal and iliohypogastric nerves. The results of injury to them are sometimes exceedingly unpleasant.

3. The estimation of the extent of the pathology before closure is begun. A second sac must always be looked for and the firmness of support in Hasselbach's triangle noted. The size of the internal ring should be determined.

4. The use of silk sutures. There has been much discussion in the past on the subject of union between muscular and aponeurotic structures, some authorities denying, for instance, that the muscular fibers of the transversalis and internal oblique can be made to adhere to Poupart's ligament. Dissection of recurrent hernias or of the inguinal region

in the cadaver, where herniotomy had been performed, will clearly demonstrate that they can be made to do so only through the intervention of scar tissue which serves as the adhesive and supporting substance. When thin and weak, it is often inadequate; when thick and firm, it is effective. In a recent dissection, where a herniotomy had been performed seven years previously, the aponeurotic fibers were found to lie embedded in scar tissue, but when released were seen to be as firm and well developed as in the normal state. Their structure or development had not been interfered with by suture to other tissues. Where catgut is used the structures are not held together long enough to allow sufficient scar tissue to form. When the suture material is silk, however, scar tissue will develop and remain in sufficient quantity. It is imperative that a good technic be followed, as the slightest infection will increase morbidity where silk is used.

5. The narrowing of the internal ring. This should be accomplished by the union of fascial structures, as the suturing of muscle to Poupart's ligament cannot give effective support. Recurrence frequently takes place at this point, and its importance in this respect has long been recognized.

6. Closure without transplantation of the cord. Where the tissues are firm, the conjoined tendon and transversalis fascia well formed and the patient under thirty years of age, it is advisable to leave all structures as nearly in their normal position as possible. It is well known that recurrent hernias form through Hesselbach's triangle, following a herniotomy for the ordinary oblique variety. The dissection of tissue behind the cord, with ineffective closure, has weakened the fascial supports and allowed a new hernia to form. In this respect it may be noted that in the operation recently described by Mr. Philip Turner of Guy's Hospital, London, the intercolumnar fibers of the external ring are not disturbed when exposing the sac, but an incision through the aponeurosis is made above the ring and parallel to Poupart's ligament. This leaves a much firmer support than where an incision has been made through the ring and then closed by suture.

7. The position of the patient. It has been demonstrated that the space of the inguinal triangle is reduced from 20 to 35 per cent by the position of flexion. The knees are rested on a sand-bag or a cross-bar on the table, so that the thighs are raised at an angle of about 45 degrees. This posi-

tion is maintained not only during the operation, but for at least a week of the convalescent period. Tissues can be brought together without tension and healing proceeds under the same favorable circumstances.

### UTERINE FIBROID

RUSSELL J. MCCURDY, M.D.

SEATTLE, WASH.

Female patient E. P., age 46, entered hospital complaining of (1) Severe pain in abdomen and back; (2) tumor in abdomen; (3) difficulty in urinating, burning urination; (4) constipation; (5) vomiting, repeatedly, approximately twelve times night and day.

Pain in abdomen and back, present for two days, simulates labor pains. This pain has been occurring each period; started menstruating yesterday.

Tumor in abdomen. Was first noticed five years ago. This tumor becomes very noticeable during the menstrual period and subsides between periods. Went to a doctor two years ago, who made a tentative diagnosis of fibroid and to another doctor four months ago, at which time a diagnosis of pregnancy was made. Difficulty in urinating, constipation and vomiting have been present the last two days.

Family history: Father, 72, living and well. Mother, 37, dead—pneumonia. Brothers. Two living and well, one dead. Sisters. Two living and well. No history of tuberculosis, cancer or insanity in the family.

Past history. Usual childhood diseases. Menstrual. Started at the age of sixteen. Always regular to the last three months. Menorrhagia the last five years to three months ago. Not much flow the last three months. Last profuse menstruation three months ago and only slight the following two months.

There are five children living, one dead—five months. Two miscarriages. Last pregnancy 1914.

The patient has never before been admitted to any hospital.

Physical examination. Temperature 98°. Pulse 72, character regular. Nutrition fair.

Physical findings. General. A woman, 46 years of age, suffering from pains of a bearing down character in abdomen and back, and with a tumor in the abdomen of a possible five years' duration. Skin rather sallow and slightly anemic. Head: Eyes, pupils equal and regular. React to light and heat. Nose, no obstruction. Ears, normal.

Teeth—Many missing, remaining ones in poor condition. Tonsils, cryptic and slightly hypertrophied. Pillars slightly hyperemic. Neck, no lymphadenopathy. Isthmus of thyroid slightly enlarged. Venous pulsation marked.

Chest, breath sounds clear throughout. Heart, sounds irregular. Enlarged to left P. M. I. 4½ inches from mid-line, fifth interspace. No murmurs.

Abdomen, hard mass palpated, filling up almost the entire abdomen; three fingers below xiphoid process and extending to both right and left practically four inches from umbilicus on either side and down to symphysis.

Vagina. Perineum very much relaxed. Cystocele and rectocele. Cervix fully dilated and effaced with protruding mass.

Back. Tenderness over both sacroiliac joints.

Diagnosis: After physical examination a diagnosis of fibroid was made.

Operation. Under ether anesthesia an abdominal panhysterectomy was performed. The uterus was

very soft and boggy, closely resembling a full term pregnancy both in appearance and consistency. The history of longer than nine months' duration, combined with the lack of breast fullness associated with pregnancy prevented one from hesitating in the decision earlier arrived at and a total removal of the uterus and its appendages was done.

The abdomen was closed with continuous sutures without drainage except for tube and wicks left in vaginal stump. The ensuing difficulties which followed proved that this was not a wise procedure, although often indulged in by some.

The abdomen became distended on the fourth day, increasing until the fifth day when the lower sutures were removed and a foul smelling purulent discharge was encountered. After a stormy period during the following month the patient finally recovered.

In soiled abdominal cases it is better that one should invariably dispense with the continuous sutures and in their place use the interrupted sutures. Obviously the large gaping wound would not have occurred in this case, had this method been used.

Pathologic report. Organ obtained from pelvis, uterus, tubes and ovaries.

Microscopic findings: The mass contained much gelatinized and degenerated portions which, on section of mass and uterine wall revealed several young fibroblasts and degenerated fibrous and muscular tissue.

Microscopic findings: Very large, practically encapsulated mass, adherent to uterus wall near the cervix. Fibroid mass in numerous places had undergone cystic degeneration. Had extended down, into and had dilated the cervical canal. Fibroid, and uterus after removal weighed approximately ten pounds.

Laboratory diagnosis: Fibromyoma.

Wassermann test: Name—E. P. Result one plus.

Progress record:

Day prior to operation: Hb. 75 per cent. t-r. b. c. 5,000,000, w. b. c. 29,000. Differential: p. m. 76 per cent, s. l. 16 per cent, l. l. 2 per cent, t. 6 per cent.

Fourth day after operation: w. b. c. 28,600. Differential: p. m. 82 per cent, s. l. 14 per cent, l. l. 4 per cent.

Fifth day after operation: w. b. c. 50,600. Differential: p. m. 82 per cent, s. l. 14 per cent, l. l. 2 per cent, t. 2 per cent.

Sixteenth day after operation: w. b. c. 17,500. Differential: p. m. 72 per cent, s. l. 22 per cent, l. l. 4 per cent, t. 2 per cent.

SPONTANEOUS DISAPPEARANCE OF DIABETES. Two cases of diabetes associated with acromegaly with the data on a few other cases that have recently appeared in the literature have given Henry J. John, Cleveland (Journal A. M. A., Nov. 21, 1925), a basis for serious consideration of the possibility of effecting a cure in certain cases of diabetes. In the two cases reported, a cure appears to have been established, as is indicated by the normal glucose tolerance curve secured in the first case, and in the presence of normal blood sugar values on a very heavy diet in the second.

### NEW ADVERTISEMENTS

The following new advertisements appear in this issue. The Dosurine Company (page 25) presents apparatus for accurate and rapid urinalysis that make an effective appeal. Taylor Instrument Company (page 12) offers Tyco's thermometer and sphygmomanometer. Victor X-Ray Company describe needful x-ray suppliés (page 8). Jell-O Company (page 29) presents D-Zerta, a sugar-free jelly powder.

\* Read before a Meeting of Seattle Surgical Society.

# NORTHWEST MEDICINE

The Journal of the State Medical Associations of  
Oregon, Washington, Idaho and Montana

Devoted to the interests of the Medical Profession of the  
Pacific Northwest

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## EDITORIAL

### SCIENTIFIC MEDICINE AND WORLD PEACE

It is a historical fact that wars have resulted from misunderstandings between nations, in which to subsequent historians the *casus belli* has not appeared of grave moment. Differences in language and varying view points of certain international questions have caused frictions which have led to war. The effective results of arbitration have been based on the principle of getting together in personal contact official representatives of nations engaged in controversy. When face to face and engaged in personal explanations, many controversial matters of apparently great importance are harmoniously adjusted which otherwise might result in discord and strife. Any relationships of an international character which thus serve to bring together representatives of the nations are provocative of peaceful contacts, whether such assemblies pertain to trade relations, politics or scientific gatherings. Among these none presents greater possibilities for peaceful relations and the cementing of harmony and friendliness, than the accomplishments of scientific medicine. A medical discovery from the hand of a scientist in any nation becomes the property of the medical profession in all lands.

Medicine offers lines of thought and investigation of the same import among men, whatever the language they speak or whatever may be their political or social conditions. When medical investigations and therapeutic applications bring together men from every land in international conference, they meet in harmony of thought and with the same purpose to benefit mankind, not only for their own individual nationalities but for the people of the world. Can there be found in any other profession or occupation of mankind the basis for universal beliefs and identical courses of thought as are presented among the medical scientists in gatherings of this character. It seems inconceivable that war and discord could prevail among men with such common ideals and purposes in life. Therefore,

scientific medicine and the friendly relationships which it fosters among medical scientists of all nations seems to offer itself as one of the most effective measures for the promotion of world peace.

### SILICOSIS

In our states of the Pacific Northwest are located mining interests of as varied a character as can be found in any part of the world. Hence there is a natural interest in any form of disease affecting miners. Silicosis, also known as miner's phthisis, or miner's consumption, caused by the breathing of rock dust, is a disease which should concern any one engaged in mining. The Bureau of Mines, of the Department of Commerce, has published a report of an investigation of this disease, showing that it is present in many mining districts of the United States. In one section 433 miners out of 720 had this disease. It is stated that an investigation by the Miner's Phthisis Commission of South Africa determined that in a mining population of 12,000, approximately 1000 men in one year would be incapacitated by this disease. In western Australia a statistical study disclosed the fact that, while among male nonminers over 15 years of age 167 per 100,000 died of respiratory diseases, among miners the number was increased to 539. While the death rate among males of this age from tuberculosis was 6, among miners it was 192 per 100,000.

Silicosis is divided into three stages, in the first of which there are physical signs of damage to lung tissues, but capacity for work is not impaired; in the second stage there is incapacity, although not serious or permanent; while in the third stage capacity for work is seriously or permanently impaired. Dyspnea on exertion and diminished expansion of the chest are symptoms, gradually increasing with the disease, while coughing, frequent colds, pains in the chest and x-ray findings aid in the diagnosis. There is especial susceptibility to tuberculosis in a man affected with silicosis. Prophylaxis against this condition is one of the simplest, consisting of the prevention of dust formation by water mining methods, such as wetting the sides and roofs of the mine and rock piles, the use of sprays and water to lay the dust after blasting, and good mechanical ventilation. It seems as if this disease should be easily prevented by the interested mine owner. While not apparently serious at the outset, ultimate incurable results may follow that should be averted.

## LEGISLATION IN WASHINGTON

As a result of abbreviating the session of the Washington legislature last winter, in order that the governor might accumulate data as to the needs of the state in its various lines of progress, the adjourned session is now being held. Several matters have been presented in which the medical profession has a live interest. Probably the Basic Science Bill has been most to the front during the past year. Its purpose is the requirement that aspirants for license to heal the sick shall present evidence of adequate knowledge on the basic sciences of pathology, anatomy, physiology, chemistry and hygiene. Unless one can give evidence of possession of this knowledge, he must pass an examination in these branches at the University of Washington. It seems as if any person having the welfare of the citizens at heart would approve of this requirement on the part of those to whom the health and well-being of our citizens are to be intrusted. But, as is usual under these circumstances, there is vigorous opposition on the part of illy prepared practitioners of various sorts and their groups of adherents and supporters.

The question of payment of an annual renewal license fee by physicians has again been presented for consideration. Such a fee is required in a large group of states and there are arguments in its favor. It serves to place an official check upon those who treat the sick and, if carefully and justly administered, would help to eliminate quacks and irregulars. The objectionable feature of the bill is the provision that the money shall be paid into the general fund instead of being used for the enforcement of the medical practice act and protection of public health, as exists in other states where such a fee is collected. The proposed disposition of the fee makes this practically an occupational tax and therefore seems unjust.

Representative Maud Sweetman, of Seattle, has introduced a bill providing for a special examining board for sanipractors, with provisions which are described in another column. A practically unanimous negative vote was registered by the committee, which would seem to be a guarantee of its defeat, if brought before the house. Aside from these matters nothing of immediate concern to the medical profession has thus far been presented at this legislative session.

## MEDICAL RESERVE OFFICERS OF THE NORTHWEST

In the case of a national emergency calling for the full effort of the United States of America to repel invasion, all citizens under the age of sixty-four will certainly be compelled to serve in some capacity towards national defense and all basic industries will be mobilized. In fact the next war, which will surely come to us within this generation, will see all citizens and all industries mobilized on an army basis and working for national defense. There will be no slackers in the next emergency, for this class will be compelled to work, even though they may not have to bear arms.

George Washington protected us and established the principle of preparedness. Theodore Roosevelt spoke softly, but carried a big stick; he kept us out of war. Woodrow Wilson claimed that we were too proud to fight, but did not prevent us from getting into war. Calvin Coolidge, with his campaign of economy, may possibly prepare us for a war which will certainly not be of our own choosing. The nations are watching us, waiting for our self-complacency to reach such a degree of unpreparedness that we could be taken unawares, attacked and mulcted of our wealth and possessions. It is only by a showing of national preparedness, by establishing a sufficient Reserve of man-power and resources, which will be available at short notice, that we can be kept out of war. We medical men must prepare in advance for the conservation of our man-power and for the ultimate reception of casualties. Every move we make is known to certain prospective enemy nations. They are watching, so prepare!

The Ninth Corps Area, which comprises the eight states west of the Rocky Mountains, i.e., Washington, Oregon, Montana, Wyoming, Utah, Nevada and California, must supply 2,050 physicians and surgeons as officers of the Reserve component of the Army of the United States of America. A total of 12,443 regular medical practitioners are now in this Area. The State of Washington has 1,756 physicians licensed to practice, from whom 289 medical officers are required. One hundred and forty-three, or just about one-half, are now enrolled in the Reserve Corps. Seventy-four and three-hundredths per cent of the quota of 191, or 143 medical men in Oregon, and half of the desired quota of 75 doctors in Idaho, or 38, have received commissions. There is room for appointment for 25 per cent more to be assigned to non-divisional or army units. None of these positions



will at present call for military knowledge or duties; none of these officers will be required to put any time on attendance at camps or special duties, or even have to study unless they desire; and under the present economy program and state of appropriations but few of them could be granted the privilege of attending military camps.

The following non-divisional medical units have been allocated for the vicinity of Seattle: Hospital Center No. 23, General Hospital No. 50, General Hospital No. 141, Evacuation Hospital No. 86, Station Hospital No. 137, Station Hospital No. 147, Headquarters IX Corps Medical Service, Surgical Hospital No. 68, Surgical Hospital No. 69, Headquarters 349th Medical Regiment, Service Company. A number of desirable appointments thereon are yet open and those physicians who accept appointments will be given favorable consideration and good assignments.

Aside from the self-evident necessity for protecting our free institutions, our homes and our families, which makes a patriotic appeal to everyone of us, those medical men who align themselves with the Reserve component of the United States Army find that the experience is not only delightful, but also increases their acquaintance with the most desirable people of the community and thereby becomes an aid to their private practice. Physicians of America travelling, visiting in other cities or foreign countries, find their official connection with the government to be of great help, as it gives them a certain authoritative position and thereby enables them to enter certain exclusive circles and to receive information and appointments which would not otherwise have been offered to them, for immediately a commission is received by a man, he becomes a gentleman by Act of Congress! It is recommended that all physicians of the Northwest who are physically in fair condition should apply for this very desirable connection and appointment. It costs nothing, it demands no time, and offers untold advantages.

The liaison officers for the Ninth Corps Area about Seattle, Portland, and Spokane are: Lieut. Col. Harry V. Wurdemann, Med-Res., 709 Cobb Bldg., Seattle; Col. Herbert M. Greene, Med-Res., 1206 Stevens Bldg., Portland; Col. Samuel E. Lambert, Med-Res., 726 Summer Ave., Spokane. It is particularly desirable that the younger medical men communicate with one of these officers, sign on the dotted line, and receive commissions as officers in the Army of the United States of America.

H. V. W.

## A SUPERLATIVE DIRECTORY

From time to time directories are presented to the public, dealing with all sorts and conditions of affairs. Doubtless all are of greater or less merit. Among them all none possesses greater value and interest than the A. M. A. Directory, published biennially. The issue recently off the press offers a mine of information regarding the medical profession of the United States and Canada. In a recent issue of the *A. M. A. Bulletin* appears a sketch of the origin and expansion of this publication. During the twenty years of its existence it has constantly developed from small beginnings to present accomplishments, with continual accretions of information and compilation of facts regarding every physician of the nations concerned. Only by a visit to A. M. A. building in Chicago and inspection of the data there collected, can one appreciate the meticulous care and detail necessary for the assembling of all the information regarding each individual practitioner. One wonders at the accumulation of facts regarding an individual and all his movements from school days to the present time which are associated with his name. This is the most valuable publication in existence for the dissemination of information regarding the medical profession and the multifarious interests with which it is concerned.

## MEDICAL NOTES

### OREGON

**GORGAS HEALTH BOARD.** Twenty-four physicians from Portland have been named as the governing committee for Oregon of the Gorgas Memorial Institute. Its purpose is to follow various lines of endeavor in the effort to promote the health and well-being of the states and nation.

**FRATERNAL HOSPITAL CORPORATION.** Previous to the fire at Astoria, plans were well advanced for the construction of a hospital by the Fraternal Hospital Corporation, which was to cost \$150,000. About \$50,000 in subscriptions was raised and the site purchased for the institution, and excavation was begun. Although the matter has lain dormant during the past four or five years, it is now felt that conditions are opportune for continuing the work. Committees are now carrying out plans for the continuance of the institution.

**PROGRESS ON STATE HOSPITAL.** The new wing of the new state hospital at Pendleton is partly constructed, and work is proceeding to such an extent that the new construction is expected to be finished by next June.

**DR. O. E. PATTERSON,** who has practiced for a number of years at Vale, has located for practice at Oak Ridge, where he will do contract lumher work.

**WASHINGTON**

**NEW HOSPITAL TO BE BUILT.** The county commissioners of Pierce county have closed a contract for the erection of the first unit of a new county hospital, which will ultimately have a capacity of from four to five hundred beds. This first unit will cost \$100,000, and will be the center unit of the completed group. It will contain the administrative and housekeeping departments, as well as the surgeries, laboratories, dispensary, etc.

**NEW HOSPITAL OPENED.** The Longview Memorial Hospital was opened for reception of patients, November 9. It was completely equipped and prepared to carry on the work of an up-to-date hospital. Its work will be conducted by a staff of thirty-two, including officials and nurses. The hospital was constructed at a cost of \$200,000.

**HOSPITAL CROWDED.** The recently constructed new wing of St. Luke's hospital at Bellingham has been utilized sooner than anticipated. The rush of patients has necessitated finishing it to an extent that was not contemplated at the time of construction.

**HOSPITAL TO RECEIVE PATIENTS.** The Tonasket hospital has been opened for the reception of patients. It is modernly equipped with accommodations for twelve patients.

**HOSPITAL CLOSES.** The Kelso Hospital closed its doors November 9, by reason of the opening of the Longview Memorial Hospital. Its patients were transferred to the latter institution.

**NORTHWEST HOSPITAL ASSOCIATION.** This organization includes physicians and hospital superintendents from Washington, Oregon and Idaho. It held a meeting in Seattle, November 16, attended by the superintendents of fifty hospitals in these three states. Discussions centered about hospital problems, such as standardization, laboratory work, etc. Dr. Malcolm T. MacEachern, of Chicago, associate director of the American College of Surgeons, took a prominent part in the discussions of the meeting.

**POLLUTION OF LAKE.** There has been much discussion amongst Seattle officials relative to the pollution of the water of Lake Washington, into which are emptied sewers of this city as well as other communities adjacent to it. Dr. G. H. T. Sparling, county health commissioner, has ordered a cessation of the pollution. It is stated that a score of typhoid cases have been attributed to this infected water, some of them due to bathing. The disposition of this sewage is a complicated and formidable problem to be solved.

**ANNUAL DINNER OF MEDICAL SOCIETY.** North End Medical Society, of Seattle, held its annual dinner, November 12, at the Faculty Club of the University of Washington. About eighty physicians and their wives were in attendance, enjoying a musical and other program.

**APPOINTED COUNTY PHYSICIAN.** Dr. P. P. Cooley, of Monroe, has been appointed by the county commissioners as county physician of Snohomish coun-

ty. His duties will include those performed by the present county physician and the care of Aldercrest tuberculosis sanatorium. He has received a two years' appointment at a salary of \$5,000 a year. County cases hitherto sent to Everett institutions will be treated at the new county farm and hospital.

**HEAD OF MAYO ASSOCIATION.** Dr. O. F. Lamson, of Seattle, has been elected president of the Association of Resident and ex-Resident Physicians of the Mayo Clinic. The association includes more than three hundred members.

**ELECTED TO SCHOOL BOARD.** Dr. C. F. Eikenbary, of Spokane, was last month elected by the school board of that city to fill the vacancy caused by the resignation of one of its members. He has served several terms on the board and will, therefore, be useful in this work.

**DR. WILLIAM W. ROBINSON** has located for practice in Spokane. After graduating from medical school, he recently served as interne at Cook County Hospital in Chicago.

**APPOINTED CITY HEALTH OFFICER.** Dr. J. P. Mooney, of Cle Elum, has been appointed city health officer by the city council. He replaces Dr. F. W. McKnight, who has recently resigned.

**IDAHO**

**HOSPITAL PURCHASED.** The Orofino hospital has been purchased by the Western Hospital Association, which represents the hospital department of the Milwaukee railroad. A contract has been made with the hospital to care for the injured employes of the Clearwater Timber Company.

**HOSPITALS ON APPROVED LIST.** It has been announced that the American College of Surgeons has placed the following eight Idaho hospitals on the approved list: St. Alphonsus and St. Luke's, Boise; Latter Day Saints, Idaho Falls; General and St. Anthony, Pocatello; St. Joseph, Lewiston; Providence, Wallace; St. Maries, St. Maries.

**DR. C. H. SPRAGUE,** of Pocatello, who has served as chest specialist for the U. S. Veterans' Bureau since the war, has been appointed medical director of Broadlawns tuberculosis hospital at Des Moines, Iowa. He assumed charge of his new work December 1.

**MONTANA**

**RESIGNS AGENCY POSITION.** Dr. E. B. Downs has resigned from the position of Fort Belknap Agency physician at Harlem. He will locate for practice at Danville, Ill., where he will also be assistant medical director of the Peoria Life Insurance Company.

**SUPERINTENDENT OF HOSPITAL.** Mrs. Elsie Smith has been appointed superintendent of the St. Peter's hospital at Helena. She has had an extensive experience in hospital work beside general nursing.

**YELLOWSTONE VALLEY MEDICAL SOCIETY** elected the following officers for the ensuing year at a meeting held at Billings, October 30: President, Dr. E. W.

Thurer; vice president, Dr. A. E. Stripp; secretary, Dr. Walter F. Weedman; treasurer, Dr. J. I. Wernham; all of Billings.

**ELECTED PRESIDENT.** Dr. Hazel Bonness, of Helena, has been elected president of the Montana State Conference of Social and Health Work. The last meeting of the organization was held at Helena.

**ELECTED PRESIDENT.** Dr. J. E. Lacy, of Helena, has been elected president of the U. S. Veterans' Bureau Medical society. The society holds a meeting once a month.

**DR. C. H. NELSON**, who has practiced for several years at Bridger, has moved to Billings.

### OBITUARIES

**DR. JOHN DUNLAP**, of Seattle, Wash., died November 4, aged 73. He was born at Bridgeton, N. J. He graduated from Princeton University and later from the Yale Theological Seminary. For several years he was pastor of Port Henry Presbyterian Church, New York. Later he was pastor of a church at Miles City, Mont. Later he studied medicine and graduated at Bellevue Hospital Medical School of New York. He practiced in Chicago for a time and located for practice in Seattle in 1907.

**DR. C. B. STRANG**, of Duvall, Wash., died October 23, from rupture of the spleen and consequent infection, aged 56. On August 31, while crossing a ravine on a log he slipped and fell in such a manner as to cause the injury which resulted in his death. He was born in Alexandria, Minn. He obtained his medical degree at the University of Minnesota. He formerly practiced at Lemmon, S. D., and located at Duvall about six months ago.

**DR. ALEXANDER J. NELSON**, of Seattle, Wash., died November 1, after a few hours illness with acute anginal attack. He was 64 years of age, a native of Virginia. He obtained his medical degree from Columbian University, Washington, D. C. He served as a member of the state board of health in Virginia before coming to Seattle in 1907. Beside engaging in private practice he served at different times in an official capacity in government and state health work. At the time of his death he was a medical inspector in the city health department.

**DR. WILLIAM CORPRON** died at Yakima, Wash., October 24, after a brief illness from kidney trouble, at 61 years of age. He was born in Middlesex County, Canada, in 1864. He graduated from the medical department of the University of Michigan in 1891. He practiced at Minnesota Lake until 1907, when he settled for practice at Yakima.

**DR. GEORGE E. STUART** died at Oregon City, Ore., October 23, aged 75 years. He had lived in Oregon City for the past thirty-six years.

**DR. FELIX L. ST. JEAN**, died at Anaconda, Mont., November 2, after a month's illness, aged 61 years. He was born at Sharrington, Quebec, in 1864, and was educated in the schools of Montreal. He received his medical education from Laval university. He

located in Anaconda in 1886, where he practiced until his death. For many years he was connected with St. Ann's hospital, and was also engaged in the drug business.

**DR. G. A. FUSON**, of Everett, Wash., died November 11 from cardiac disease. Formerly he practiced at Somers and for eight years at Kalispell, Mont. In 1921 he located at Great Falls, where he accepted the position of full time health officer of Cascade county. Two years ago he located at Everett, since which time he has been health officer of that city.

## CORRESPONDENCE

### AN ILLEGAL PRACTITIONER

To the Editor:

For the benefit of the medical profession of the Northwest, I think it would be advisable to publish the following letter:

Billings, Mont., Nov. 3, 1925.

Olin West, M. D.,  
Secretary A. M. A.,  
Chicago, Ill.

Dear Dr. West:

Dr. de Orgler, dermatologist, was the name on the card presented by W. M. de Orgler, who claimed Denver, Colo., as his home and said he had a medical degree from Vienna, also that he was licensed in Colorado and had reciprocity with Nebraska and Wyoming, as well as a permit from the Montana board to practice the treatment of skin diseases. His ad in the local paper and his arrangement with a local druggist attracted my attention. Dr. Strickland, secretary of the Colorado Board, and Dr. Cooney, of the Montana Board, declined to recommend the faker. The Assistant County Attorney, after we had sent a man for treatment, one upon whom we could depend for testimony, had de Orgler arrested for practicing without a license. He paid a fifty-dollar fine and left for Worland, Wyo. I wrote Dr. Whedon the story and thought it might be a good thing to tell you and have you publish it so as to stop his business.

E. G. BALSAM, M.D.

Secretary, Medical Association of Montana.

## PUBLIC HEALTH LEAGUES

### WASHINGTON

That public health issues will be to the fore at the present session of the Washington legislature, which convened November 9, is indicated by a number of measures which have been introduced. Probably the main struggle will center about the Basic Science Bill, Senate Bill 123, which has been presented by the Public Health League. This bill calls for a uniform examination for all healing applicants before a special examining committee from the faculty of the University of Washington. The subjects to be covered in this test are pathology, anatomy, physiology, chemistry and hygiene.

## REGULAR BOARDS MAINTAINED

This bill does not interfere with the regular professional examinations. The medical, osteopathic, chiropractic and drugless healing boards will remain the same. However, before an applicant can appear before his own particular board it is necessary for him to pass a satisfactory examination in the basic science at the university.

With the exception of the osteopaths all the non-medical professions are waging a strong fight against favorable consideration. The chiropractors have a vigorous lobby at the capitol, and the sanipractic physicians are especially plentiful. The chiropractic lobby states that this measure would mean a very abrupt rise in their educational qualifications, while the sanipractic contingent at Olympia offer the argument that here is the "medical trust" in operation and that such an examination is unnecessary.

## THE SWEETMAN BILL

Sponsored by Mrs. Maud Sweetman of King County, spokesman for sanipractics, House Bill 106 has made its appearance, with some scattering support apparent. One purpose is to grant recognition to the group of sanipractics whose licenses to practice were revoked a year ago, when the sanipractic diploma mill was exposed in Seattle. This bill is extremely drastic in its provisions. It would give a separate examining board for this cult, and the entire license work would be removed from the Director of Licenses and placed under the Secretary of State.

Among the various subjects to be studied, on which the practice of sanipractic is to be based, are anatomy, physiology, hygiene, pathology, kinesiology, food science, urinalysis, herbology, general and special diagnosis, chemistry, toxicology, obstetrics, hydrotherapy, psychotherapy, electrotherapy, heliotherapy, gynecology and *all subjects in their relation to sanipractic*. This bill appears to face some difficulties in the House. After a hearing before the House committee on Medicine, Dentistry and Drugs, an adverse vote was obtained by the friends of public health, and the bill, therefore, will come before the House with this serious handicap.

## TO RENEW OR NOT TO RENEW

The question as to the payment of a renewal fee by physicians each year for license is being considered by the legislature. The Director of Licenses has prepared such a bill and is giving it his support. Under the provisions of this bill, all physicians would pay into the general fund of the state a fee of \$2 annually. This money would go into the general fund, and probably not a dollar of it would be used in professional law enforcement effort.

The League has consistently opposed such legislation as being merely an occupational tax and class legislation. If this money could be placed into a special fund for a specific purpose of law enforcement for the professional acts, it would mean a great deal in the elimination of quackery in Washington. Whether this change can be made in this administration measure is problematical.

## MEDICAL RESERVE CORPS

The first state in the Ninth Corps Area to go "over the top" in enrolling its proportionate quota of Medical Reserve Corps officers is Utah. Not only has its medical profession contributed more than the number of medical officers called for, but its dental profession has enrolled twice as many dental officers as would be a fair quota from the number of dentists licensed to practice in Utah. This more than generous response from the patriotic medical and dental professions of Utah sets a high standard in Medical Reserve Corps matters for the other seven states in the Ninth Corps Area.

There are four Medical Department units allocated to Utah, all of which are now in process of organization. One unit—General Hospital No. 61, Salt Lake City—has progressed to an extent warranting the preparation of its plans for mobilization in the early future. The success of Medical Reserve affairs in Utah is largely due to the patriotic energy of Colonel S. C. Baldwin, Med-Res., Salt Lake City. The Salt Lake County Medical Society has also formally assumed responsibility for the promotion and support of the four Medical Department Reserve units allocated within that county.

The first unit of the Medical Reserve Corps in the Ninth Corps Area to complete its plan for mobilization is Evacuation Hospital No. 90, San Diego, Calif. The Commanding Officer of this unit is Colonel Alfred E. Banks, Med-Res., San Diego, who has just been ordered to active duty in San Diego for fifteen days to fill the last few vacancies in his unit and to perfect its organization. With these final steps, Evacuation Hospital No. 90 will be in a position to take the field immediately in an emergency, with a full administrative and professional personnel, each man of which is assigned to an appropriate duty in a well rounded and coordinated service. An outline of the special duties of each position has been prepared and these are discussed by the incumbents at the monthly dinner conferences, held by the personnel of Evacuation Hospital No. 90.

Recruiting for the necessary members of the Reserve Nurse Corps for the unit is now going on. A Chief Nurse has been appointed, and junior nurses are now being selected.

Much credit is due to the excellent work of Colonel Banks in completing the organization of Evacuation Hospital No. 90. He is now giving valuable aid in the organization of Station Hospital No. 146, which is also allocated to San Diego. The County Medical Society, San Diego, has assumed a sponsorship for both these organizations, and is supporting them in every possible way.

The following named Medical Reserve Officers, having been assigned to organizations, are assigned within the units as indicated:

General Hospital No. 46, Communications Zone:  
Major Irving M. Lupton, Med-Res., 286 Culpepper Ave., Portland, Oregon, as Assistant to Chief of Surgical Service.

## General Hospital No. 50, Communications Zone:

Lieutenant-Colonel Hiram M. Read, Med-Res., U. S. V. Bureau, Portland, Oregon, as Chief of Medical Service.

Lieutenant-Colonel Copeland Plummer, Med-Res., 817 Summit Ave., Seattle, Washington, as Chief of Surgical Service.

Major Frank T. Wilt, Med-Res., 1015 First Ave. W., Seattle, Washington, as Assistant to Chief of Medical Service.

Major Clyde T. Smith, Med-Res., U. S. V. Hospital No. 52, Boise, Idaho, as Assistant to Chief of Surgical Service.

Major William N. Keller, Med-Res., 1723 N. Fife St., Tacoma, Washington, as Assistant Chief of Surgical Service.

Captain Merle S. Harmon, Med-Res., 7212 Woodlawn Ave., Seattle, Washington, as Surgical Ward Officer.

Captain George I. Birchfield, Med-Res., 9350 55th Ave. S., Seattle, Washington, as Surgical Ward Officer.

Captain Howard J. Knott, Med-Res., 3112 E. Laurelhurst Drive, Seattle, Washington, as Surgical Ward Officer.

## 65th Surgical Hospital, 3d Army:

First Lieutenant George J. Wood, Med-Res., care Frank Wood, St. Helena, California, as Assistant Operating Surgeon.

## Hospital Train No. 65, Zone of Interior:

First Lieutenant Milton E. Wilson, Med-Res., 134 E. 53d St., Portland, Oregon, as Medical Service.

## Hospital Train No. 69, Zone of Interior:

First Lieutenant Kirk H. Prindle, Med-Res., 63 69th St., Portland, Oregon, as Medical Service.

## 68th Surgical Hospital, 3d Army:

Major Robert M. Jones, Med-Res., Silvagni Bldg., Price, Utah, as Chief of Surgical Service.

Captain Walter A. Burg, Med-Res., Uniontown, Washington, as Roentgenologist.

## 69th Surgical Hospital, 6th Army:

Major Paul I. Carter, Med-Res., U. S. V. Hospital No. 59, R. F. D. No. 2, Tacoma, Washington, as Operating Surgeon.

Captain John H. Bridenbaugh, Med-Res., 240 Hart-Albin Bldg., Billings, Montana, as Roentgenologist.

## 70th Surgical Hospital, 6th Army:

Captain John H. Flynn, Med-Res., St. Helens, Oregon, as Assistant Operating Surgeon.

First Lieutenant Dean B. Seabrook, Med-Res., 454 E. 9th N., Portland, Oregon, as Assistant Operating Surgeon.

First Lieutenant Carleton P. Pynn, Med-Res., 189 E. 32nd St., Portland, Oregon, as Assistant Operating Surgeon.

First Lieutenant Samuel G. Morgan, Med-Res., 201 Van Dusen Bldg., Astoria, Oregon, as Assistant Operating Surgeon.

First Lieutenant Harry A. Struppler, Med-Res., Box 367, Pullman, Washington, as Supply and Mess Officer.

## 83d Evacuation Hospital, 3d Army:

Captain Charles H. Manlove, Jr., 1559 E. Stark St., Portland, Oregon, as Commanding Officer.

## 84th Evacuation Hospital, 3d Army:

Captain Roy A. Payne, Med-Res., 615 Stevens Bldg., Portland, Oregon, as Chief of Medical Service.

First Lieutenant Edmund W. Simmons, Med-Res., 756 E. 17th St. N., Portland, Oregon, as Medical Ward Officer.

## 85th Evacuation Hospital, 3d Army:

Lieutenant-Colonel James G. Matthews, Med-Res., 721 Paulson Bldg., Spokane, Washington, as Chief of Surgical Service.

Major Charles O. Moore, Med-Res., Paris, Idaho, as Assistant to Chief of Medical Service.

Captain John A. Lamb, Med-Res., 424 Fourth Ave. E., Kalispell, Montana, as Roentgenologist.

First Lieutenant Johnson D. Leonard, Med-Res., Burns, Oregon, as Medical Ward Officer.

## 86th Evacuation Hospital, 6th Army:

Lieutenant Colonel Frederick J. Cullen, Med-Res., Puyallup Clinic, Puyallup, Washington, as Chief of Medical Service.

Major Nathaniel E. Roberts, Med-Res., Capital National Bank Bldg., Olympia, Washington, as Assistant to Chief of Surgical Service.

Major Donald V. Trueblood, Med-Res., 1732 16th Ave., Seattle, Washington, as Assistant to Chief of Surgical Service.

Captain Francis A. Brugman, Med-Res., 602 Medical and Dental Bldg., Seattle, Washington, as Surgical Ward Officer.

## Station Hospital No. 148, Communications Zone:

Major Owen Taylor, Med-Res., Scenic Way, Kent, Washington, as Chief of Medical Service.

## Medical Laboratory No. 1, (Aviation)

## Communications Zone:

Captain Francis J. Delaney, Med-Res., Port Townsend, Washington, as Physiologist.

The following named Medical Corps Reserve Officers are relieved from their present assignment and are assigned as indicated:

Major Calvin S. White, 1308 E. 32d St., Portland, Oregon, from assignment as Chief of Medical Service, Station Hospital No. 138, Communications Zone, and assigned to the unit as Commanding Officer.

Major George E. Low, Coquille, Oregon, from attachment to 425th Hospital Company, 349th Medical Regiment, Corps Troops, and is assigned to the unit.

Major Cecil C. Kellam, Port Blakely, Washington, from attachment to 426th Hospital Company, 349th Medical Regiment, Corps Troops, and is assigned to the unit.

The following Medical Reserve Officers have been assigned to command the Medical Reserve Units indicated opposite their respective names:

Colonel Edward A. Rich, 1217 Rust Bldg., Tacoma, Washington, to General Hospital No. 141 (Barnes General Hospital).

Lieutenant-Colonel Frederick T. Harris, Shafer Bldg., Seattle, Washington, to Station Hospital No. 137.

Lieutenant-Colonel William D. Kirkpatrick, National Bank Bldg., Bellingham, Washington, to 69th Surgical Hospital.

Major Earle F. Ristine, American Bank Bldg., Seattle, Washington, to 86th Evacuation Hospital.

The above units include examples of the most important hospital establishments of the Medical Department. Within them, they require officers having special qualifications in practically all of the major professional branches. As their organization has so far not progressed beyond the early stages, they have many vacancies which should be filled by Medical Reserve Officers resident in the Puget Sound district. Members of the medical profession desiring to affiliate themselves with these hospitals should get in touch with their respective commanding officers.

## REPORTS OF SOCIETY MEETINGS

### OREGON

#### CENTRAL WILLAMETTE MEDICAL SOCIETY

Pres., W. B. Neal; Secty., G. S. Beardsley

Central Willamette Medical society held a meeting at Eugene hotel, Eugene, November 5, with Dr. E. W. Howard, of Corvallis, in the chair. There were twenty-five physicians in attendance.

Dr. A. H. Ross, of Eugene, gave an address on "Forms of Inflammation of the Kidneys." Dr. O. R. Gullion, of Eugene, discussed "More Common Eye Diseases, Diagnosis and Treatment."

#### COOS-CURRY COUNTIES MEDICAL SOCIETY

Pres., G. E. Dix; Secty., R. J. Dixon

Coos-Curry Counties Medical Society held a meeting at the Keizer hotel, North Bend, November 3. Fourteen members were in attendance.

Dr. Russell Keizer discussed a series of cases illustrated with x-ray pictures. It was voted to hold the next meeting of the society December 8, at Hotel North Bend.

#### PORTLAND CITY AND COUNTY MEDICAL SOCIETY

Pres., H. C. Bean; Secty., K. H. Martzloff

A meeting of Portland City and County Medical Society was held at Portland Hotel, Portland, Oregon, November 4, President Harold Bean presiding. Minutes of the previous meeting were read and approved.

##### PROGRAM

The first paper by Dr. Dorwin Palmer was entitled, "Methods Acceptable for the Radiographic Diagnosis of Gallbladder Disease." It concerned itself principally with the intravenous use of the sodium salt of tetrabromphenolphthalein.

The second paper by Dr. Otis Akin was entitled, "The Treatment of Hallux Valgus. Describing a New Operative Procedure and its Results." It was accompanied by lantern slides, illustrating the salient

feature of the paper. The procedure appeared most logical and far more rational than the so-called Mayo-Heuter operation. The discussion, led by Dr. Holden, was followed by Drs. McClure, Dillehunt, C. U. Moore and Amos.

There being no further business to transact, the meeting was adjourned.

A meeting of Portland City and County Medical Society was held at Portland Hotel, Portland, Ore., Wednesday evening, Nov. 18, 1925.

In the absence of Drs. Bean and Benson Dr. T. H. Coffen acted as chairman. The minutes of the previous meeting were read and approved.

The first order of business concerned the election of members from Washington County who had applied for membership in this society. At the request of the Council of the Oregon State Medical Society the following were elected to membership in the Portland City and County Medical Society, pending the formation of a local society in Washington County: Ira E. Barrett, Tigard; John O. Roble, Hillsboro; W. R. Taylor, Forest Grove; John T. Mackay, Hillsboro; F. T. Rucker, Sherwood; Quentin Tucker, Forest Grove.

The first paper was read by Dr. Howard Carruth, being a talk concerning the treatment of eye infections.

The second paper was read by Dr. George Burget, Professor of Physiology in the University of Oregon Medical School, entitled, "The Control of the Flow of Bile." He reviewed briefly the work of Odi and Henderson, in which they describe the so-called "sphincter of Odi" at the termination of the common bile duct in the duodenum. The work of Meltzer and its clinical application by Lyon was also described, the experimental work of Judd and Mann at the Mayo Clinic, and their explanation of dilatation of the biliary ducts following the extirpation of the gallbladder. Dr. Burget described his own original research, demonstrating quite logically the influence of duodenal tonus, peristalsis, and especially the factor which the oblique course of the common bile duct through the wall of the duodenum play in the secretion of bile into the duodenum. It was demonstrated that the so-called "sphincter of Odi" plays probably a purely hypothetical role in the control of the flow of bile. Discussion was opened by Dr. John Fitzgibbon, followed by Dr. J. Else.

Dr. H. W. Howard reported three cases of stone in the ureter which he was able to remove by the use of a spiral tipped ureteral catheter.

### WASHINGTON

#### KING COUNTY MEDICAL SOCIETY

Pres., A. C. Crookall; Secty., C. E. Watts

The general meeting of King County Medical Society was held at Seattle, Wash., November 2, President Crookall presiding. Members present, 125. Minutes of October 5 read and approved.

Applications of Drs. H. L. Jones and A. Golitzin voted on and passed. Applications of Drs. Ivan

Shuler, Frederick Jones, Robert Mullarky and Russell Reed were read.

A letter from Dr. Epplen, regarding the Public Health League, was read.

#### PROGRAM

Dr. State Mason presented a paper on "Some of the Pertinent Problems of Goiter." He classified goiters, describing the characteristics of each and methods of treatment. Several atypical varieties were described. Various methods of treatment were considered. Lugol's solution and its effects were discussed. The pathology of the gland is changed from that of hyperplasia to that of colloid goiter by iodine. He reported experimental work which he had performed on dogs and patients to prove the change in pathology. He made a plea for wider use of iodine in adolescent goiter. Slides illustrating the paper were shown.

In discussion Dr. King said if Lugol's solution does not give benefit, operation should be approached with caution. After diagnosis of exophthalmic goiter the patient should be prepared and operated on as soon as possible. In postoperative reactions, large doses of Lugol's solution should be given.

Dr. Bowles discussed the use of Lugel's solution. Dr. D. C. Hall stated the physicians of this region should take the lead in investigation and management of goiter.

Dr. George Dowling spoke of the uses and indications for digitalis, stating that it is of benefit only where there is cardiac incompetency.

Dr. Snively said that properly given, x-ray gives a high percentage of good results. It rarely makes subsequent operation more difficult. Many adenomas will respond to it. Severe exophthalmic cases should be given treatment over a small portion of the gland only.

Dr. H. J. Davidson spoke of the cardiopath who also has toxic goiter, a type in which the goiter may be overlooked. X-ray treatment is of value in diffuse hyperplasia.

Dr. Wm. O'Shea read a paper on "The Vomiting of Pregnancy." Toxemia best explains the phenomena, due in part to glycogen deficiency. Frequent small feedings are important. The diet should be high in carbohydrates. Treatment directed against toxemia and acidosis was discussed in detail, with special reference to the use of glucose or glucose and insulin. A case of vomiting controlled by glucose and insulin was reported.

Dr. Geo. Dowling discussed the etiology of vomiting of pregnancy, with special reference to acidosis. Dr. Hoopman discussed the use of large enemas.

#### SURGICAL SECTION

The Surgical Section of the society held a meeting November 9, 1925. Fifty members were present.

#### PROGRAM

The first paper was on "Intrapelvic Relaxations," by Dr. Albert P. Duryea of Everett. Retrodisplacement is ranked high as a cause of dysmenorrhea in the multipara. Seventy-five to ninety per cent of

these are due to childbirth. Among the prominent causes of intrapelvic relaxation are too frequent childbirths, endocrine disturbances, pituitrin traction and high forceps, improper repair of lacerations, infection of repaired lacerations, too tight binders, too early resumption of erect posture, too early resumption of all active duties and no proper exercise in bed or after getting up. The best treatment for these conditions is prophylaxis.

In discussion Dr. Gordon Thompson stated he was glad to hear the subject discussed from the standpoint of prophylaxis. Lynch of California has found many cases that are normal at six weeks may develop retroversion in three to six months. Too early voluntary effort in labor and too early application of forceps are causes conducive to intrapelvic relaxations. Lying on the abdomen early in puerperium is of advantage and gives better results than the knee-chest position.

The second paper "A Consideration of Gastroenterostomy," was given by Dr. O. S. Proctor. Among the indications mentioned were pyloric obstruction and duodenal ulcer. The older the ulcer and the more the scar tissue, the better the result. Ulcers perforating in type should be removed or destroyed by cauterization, also ulcers on the posterior wall. The ulcer should be widely excised, in addition to doing the routine gastroenterostomy. Among contraindications are pyloric stenosis in infants, gastric ulcers of an inch in diameter, perforating peptic ulcers. Forty per cent of the cases undone in the Mayo Clinic gave no history indicative of pathology. At times the wrong loop of bowel has been used. Wounding of the middle colic artery is a tragedy that sometimes occurs, and no sharp angulation should be made in the jejunum. In postoperative care nothing by mouth for thirty-six to forty-eight hours. Coarse and irritating foods should be omitted, and the patient should be fed frequently. Dr. Proctor showed slides of various steps and methods of performing gastroenterostomy, with "loop" and "no-loop" operations, also methods of excising ulcers and the technique of pyloroplasty.

In discussion Dr. Conrad Jacobson stated it is recognized that gastroenterostomy is the best procedure in duodenal ulcer, but gastric ulcer yields better results in European clinics by resections. It was his opinion there will be more pyloroplasties in the future than gastroenterostomies. Dr. Snively observed that many failures are due to improper location of the stoma. It is best to place it as near the pylorus as possible and not too high. Dr. Whitlow spoke of a gastric syphilitic patient, on whom gastroenterostomy had been performed. These cases reacted very favorably after operation, whereas the usual anti-leptic treatment had given no relief.

#### PIERCE COUNTY MEDICAL SOCIETY

Pres., W. B. McCreery; Secty., W. B. Penney

Regular meeting of Pierce County Medical Society was held at Tacoma, Wash., November 10, 1925. Minutes of the last meeting read and approved.

The following proposed change in the by-laws was recommended by the Library Committee and approved by the Board of Trustees:

Article V., section 1, shall be changed to read: "The annual dues shall be \$25.00 for members practicing in the city of Tacoma and \$12.50 for those practicing outside of the city; and shall be payable on January first of each year, and if not so paid before the first of March following, the member shall be held as suspended from this society and in the State Association, and his name shall be placed on the list of non-affiliated physicians in the report to the State Association for that year, and shall so remain until such disability is removed. Members elected on or after July first of each year shall pay one-half of the annual dues.

Section 4: Ten dollars of each membership fee from the members of the city of Tacoma shall be applied to the Library Fund, and five dollars of each membership fee of those practicing outside of the city of Tacoma shall be applied to the Library Fund.

The members voted \$100.00 for the Better Business Bureau for the year 1926.

Dr. Millard T. Nelson was elected to membership.

#### PROGRAM

"Why Physicians Should Advertise, and How," Sydney Anderson.

"Medical Publicity," Dr. W. N. Keller.

These papers created animated discussion, which was participated in by Drs. J. F. Griggs, H. G. Willard, E. A. Rich, C. D. Hunter, I. H. Robb, E. A. Layton, J. B. McNerthney and William B. McCreery

The following resolution was presented by Dr. Willard, and carried:

"Resolved, That the Pierce County Medical Society in meeting assembled endorse and support in every legitimate way all agencies for the education of the public and dissemination of knowledge in health matters, including the Washington Public Health League, the Gorgas memorial movement and the public press, and in accordance with the ethics and practice of the medical profession disapprove of individual competitive advertising, believing that such advertising misleads the public and results in discord and inefficiency in medical service."

#### IDAHO

##### BONNER COUNTY MEDICAL SOCIETY

Pres., F. B. Evans; Secty., N. R. Wallentine

A meeting of Bonner County Medical Society was held at Sandpoint, Ida., Oct. 21, 1925.

#### PROGRAM

Dr. R. M. Bowell, of Bonners Ferry, read a paper on "Epidemic Encephalitis.

Mr. F. S. Jennings read a paper on "Immunity and Its Artificial Production."

Dr. O. F. Page, of Sandpoint, read a paper on "Problems of Interest to the Profession, with Especial Reference to our Relations to the Public."



## BOOK REVIEWS

Edited by KENELM WINSLOW, M.D.

DIET IN HEALTH AND DISEASE. By Julius Friedenwald, M. D., Professor of Gastro-Enterology in the University of Maryland School of Medicine, Baltimore; and John Ruhrah, M. D., Professor of Diseases of Children in the University of Maryland, Baltimore. Sixth edition, thoroughly revised. Octavo of 987 pages. Philadelphia and London: W. B. Saunders Company, 1925. Cloth, \$8.00 net.

One of the commonest forms of fraud which pleases patients is that of "putting them on a diet." The word fraud is used because only too often the diet prescribed is purely empiric, such as prescribing white meat in place of dark in arthritic conditions, or eliminating meat in chronic nephritis, whereas it is most desirable in nephrosis or parenchymatous form, or forbidding meat in hypertension. Then, on the other hand, there is no form of treatment more subject to fads and fancies. This book is founded wholly on experimental and clinical data and is thoroughly sound and reliable. The appellation of "ptomaine poisoning" is always a source of offence to the diagnostician and seems to be still employed in place of food poisoning by physicians. In this work it is shown that food poisoning means infections or their toxins, infection from specific animal diseases, where the affected flesh has been eaten, and botulism.

Carotinemia is noted in this new edition, the canary yellow or orange color of the skin in persons taking an extensive vegetarian diet, including carrots, spinach, oranges, lettuce. The disorder is harmless and disappears on omitting the causative dietary. Under acidosis Marriott's splendid work is referred to with which the readers of NORTHWEST MEDICINE will soon be familiar, if they are not already. The description of diet for enteroptosis is good as far as it goes but this is not far enough. One must have very free bowel movements, at least twice a day in many cases, to avoid so-called biliousness when increasing the calories over the 3500 mark, when anorexia and nausea will defeat the very purpose for which treatment is given, i. e., gain in weight. The reviewer has found that a combination of paraffine oil with agar agar is most suitable, in addition to green vegetables, fruits, honey and buttermilk.

A great deal of this book has been wholly or partly rewritten, the following sections especially: Sherman's tables of salt content of foods, food poisoning, carotinemia, anaphylaxis, infant feeding, the food requirements of infants and children, weight, height and age tables, goat's milk, dried milks, citrated milk, gelatin, celiac disease, diseases of the stomach and intestines, high blood pressure, nephritis, rheumatoid arthritis, vitamins and the deficiency diseases, postoperative diets, and diabetes. There are very good sections on dietetic treatment in ulcer of the stomach and duodenum but none which is intended for the ambulant patient. Many patients with long standing indurated duodenal ulcer are but occasionally incapacitated, the amount of disability is slight, and they refuse to take to bed. To these pa-

tients may be given at meals cream and milk with soft boiled eggs, with cream and milk once between ordinary meal times. This diet for two weeks with bismuth before breakfast and bismuth, sodium bicarbonate and magnesia after meals will often give very satisfactory results. The reviewer has known patients to go on satisfactorily for years with such treatment twice annually perhaps. Friedenwald and Ruhrah's work on dietetics has become the standard treatise in its field and we welcome another edition because recent researches have greatly widened the dietetic horizon, and frequent editions will be required to keep pace with the pacemakers.

WINSLOW.

**THE SURGERY OF PULMONARY TUBERCULOSIS.** By John Alexander, B. S., M. A., M. D. Assistant Professor of Surgery in the Medical School, University of Michigan, etc. Illustrated with 53 Engravings and 12 Plates. 356 pp. \$4.50. Lea & Febiger, Philadelphia and New York, 1925.

It comes as something of a revelation to most American surgeons that approximately two-thirds of the cases of pulmonary tuberculosis which have failed to respond to medical treatment can be cured by surgery. Of course, the indications are becoming better understood and within reasonable limits the more definitely the disease is confined to one lung, the more rapid and complete will be the cure.

Continental surgeons have for many years been doing pioneer work in this field. The modern operation of extrapleural thoracoplasty has been called the Wilms-Sauerbruch after the two men who have done most to develop its technic. In the surgical treatment of pulmonary tuberculosis, there is considerable choice of procedure and this work by Alexander is the best in any language for the elucidation of the whole subject from its early history to the finer points of modern technic. Its study will well repay all surgeons who are anxious to help the sufferer from tuberculosis.

FORBES.

**DEVELOPMENT OF OUR KNOWLEDGE OF TUBERCULOSIS.** By Lawrence F. Flick, M. D., LL. D., co-founder of the Rush Hospital for Diseases of the Chest, etc. 783 pp. \$7.50. Lawrence F. Flick, Publisher, Philadelphia, 1925.

This book is a resume of the entire history of the struggle for truth in connection with tuberculosis. It represents a tremendous amount of library work and must have required seemingly endless days of patient endeavor in getting at historical facts, dates, translations, etc., to say nothing of the difficulties in the matter of chronologic order and proper sequence. Flick has searched the literature as far back as medical literature goes, beginning with a period approximately 2250 years before Christ, and following the work and thought of men through all the centuries in numerous countries, brings us by logical sequence and unfolding intelligence down to the very recent discovery of the true cause, the tubercle bacillus in 1882, and introduces us to the subsequent unravelling of many problems.

There was the same natural tendency then as now for men to be guided or influenced by what has gone before and by the work of their contemporaries. It is interesting to note how in the mass of conscientious workers a few names stand out in striking contrast. Largely it is evident that those investigators, whose work was of great value, are those who cut loose from the antiquated conception of things and struck out into a new line of reasoning. Morton, Auenbrugger, Stark, Bayle, Laennec, Louis. How they struggled against opposition and lack of reason with no scientific equipment or laboratory facilities, feeling their way along through the darkness with the unconquerable hope of arriving at the truth. Virchow, Pasteur, Villemin, Koch. What inspiration in these names! This book does not tell one how to practice medicine, but its perusal will make a better physician of him.

SLYFIELD.

**SKULL FRACTURES.** Annals of Roentgenology, Volume VI. Roentgenologically Considered by William H. Stewart, M. D. With Surgical Comments by William H. Lockett, M. D. 64 pp. of text. 44 full page plates. \$12. Paul B. Hoeber, Inc., New York, 1925.

This edition maintains the high standard set by its predecessors in this series of Monographic Atlases. It is a work which will be found invaluable to those radiographers who use a work of reference and, in fact, to all practitioners who wish to compare the radiographs of their skull cases with the classical ones depicted here. The subject is covered in 83 roentgen ray studies on 44 full page plates. The clearness, definition and general excellence of these makes the work one of great value.

FORBES.

**INFECTIONS OF THE HAND.** A guide to the Surgical Treatment of Acute and Chronic Suppurative Processes in the Finger, Hand and Forearm. By Allen B. Kanavel, M. D., Professor of Surgery, Northwestern University Medical School, etc. Fifth Edition. Thoroughly Revised. Illustrated with 146 Engravings. 499 pp. \$5.50. Lea & Febiger, Philadelphia and New York, 1925.

To quote from the preface of this work, "In the treatment of infections of the hand, the surgeon should never forget that the technical procedures incident to instituting drainage, though important, are only the first steps in the treatment." The methods advocated by the author have been used for a sufficient length of time for us to appreciate their soundness and usefulness. His pioneer work rescued the subject of infections of the hand from the uncertainty which so long surrounded it and we now have definite methods to direct us instead of the cutting and slashing which prevailed until the appearance of his work some years ago. The fifth edition has some additional material, mostly in the sections devoted to aftertreatment.

This book should be of great value to any general practitioner who has to treat so-called "industrial cases." The use of tincture of iodine as a prophylactic measure is advocated to the exclusion of all

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**BONE SARCOMA.** An Interpretation of the Nomenclature used by the Committee on the Registry of Bone Sarcoma of the American College of Surgeons. By E. A. Codman, M. D., Registrar, Boston, Mass., with 24 Illustrations. 93 pp. \$2.00. Paul B. Hoeber, Inc., New York, 1925.

This book is a reprint of an article which appeared in February, 1925, in the American Journal of Roentgenology and Radium Therapy. The book is devoted to the classification of bone tumors, especially of bone sarcoma, and is the partial report of the committee appointed five years ago by the American College of Surgeons, consisting of Drs. Bloodgood, Codman and Ewing. It will prove of great value to pathologists and surgeons generally.

FORBES.

**AN INTRODUCTION TO OBJECTIVE PSYCHOPATHOLOGY.** By G. V. Hamilton, Director of Psychobiological Research, Bureau of Social Hygiene, Inc., New York City, with foreword by Robert M. Yerkes, Professor of Psychology, Yale University. 354 pp. \$5.00. C. V. Mosby Co., 1925.

This book presents the account of the author's studies and interpretations of behavior as found in his many patients. The work is original and carefully carried out, and undoubtedly will open a new field which will later bring the physician in closer touch with the "neurotic individual." As is to be expected, the general practitioner understands but little of the inner workings of the neurotic and mentally sick, but this book will be of considerable value in helping him to adjust their problems. Part I is devoted to clinical psychopathology, exemplified by two hundred cases, with a discussion of the survey of findings. Part II takes up the principles of objective psychopathology.

While this work will be of greater interest to psychologists, neurologists and psychiatrists, yet the general practitioner should wake up to this study for the "relief of nervous people," especially since it has been estimated that between fifty and seventy-five per cent of patients applying for medical treatment are of the neurotic type.

WILL.

**TREATMENT OF KIDNEY DISEASES AND HIGH BLOOD PRESSURE.** By Frederick M. Allen, M.D. Practical Manual for Physicians and Patients. 206 pp. The Physiatrie Institute, Morristown, N. J.

The author states that the disturbances involved in kidney disease are essentially three, namely, nitrogen retention, edema and hypertension, the important remedies for which are protein and salt restriction. He claims that the specific treatment of high blood pressure is a salt-free diet. The primary cause of diseases of the renal-circulatory organs is infection, the most important offender being the streptococcus group. He stresses prophylaxis in the prevention of renal-vascular disease, particularly by

the avoidance of infections. Attention is paid to the general treatment of this condition, special stress being given to diet. Beside general chapters on this subject, considerable space is devoted to recipes and menus.

**THE MEDICAL CLINICS OF NORTH AMERICA.** (Issued serially, one number every other month). Volume IX, Number II, New York Number, (September, 1925). Octavo of 271 pages, with 24 illustrations. Per clinic year, (July, 1925, to May, 1926) Paper, \$12.00; Cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company.

In this volume are clinical reports of diseases of the heart and circulation by five different clinicians, covering a variety of conditions. Two men discuss phases of chronic nephritis. Cecil and Hansson offer a discussion of physiotherapy in chronic arthritis. There is a brief digest of each modality and a description of the application of each in the treatment of arthritis. They indicate that some forms of this condition can be greatly benefited by physical measures. Ornstein considers pulmonary syphilis, a comparatively rare disease, of which a limited number have been reported in the literature. He reports three cases, all presenting marked pulmonary symptoms and all relieved by antisiphilitic treatment. There are other interesting reports on various diseases.

**THE SURGICAL CLINIC OF NORTH AMERICA.** (Issued serially, one number every other month). Volume V, Number IV. (Chicago Number —, August, 1925). 246 pages with 54 illustrations. Per clinic year (February, 1925, to December, 1925). Paper, \$12; Cloth, \$16 net. Philadelphia and London: W. B. Saunders Company.

This Chicago number contains clinical reports from leading surgeons of that city, dealing with surgical conditions of the spleen, appendix, brain, gallbladder, stomach and intestines. Andrews considers a simplified herniotomy. Bettman reports the treatment of mediastinal tumors, Hodgkin's disease in the anterior mediastinum, and carcinoma of the intrathoracic portion of the esophagus. Many other instructive discussions are presented.

**PULMONARY IMMUNIZATION.** Certain tests made by W. H. Manwaring, Francis I. O'Neill, Kenneth W. Thompson and Leonard G. Dobson, Stanford University, Calif. (Journal A. M. A., Nov. 28, 1925), with actively and passively immunized lungs, give a conception of immunologic adaptations of fixed tissues not in accord with current views. They indicate the removal or the masking of the preliminary fixed tissue hypersensitiveness, the development of fixed tissue resistances that in themselves would fully account for immunity, unassisted by circulating antibodies. As the lungs of passively and of actively immunized dogs are apparently identical in these tests; the tests give no evidence that any tissue responsiveness in the lungs acquires properties during active immunization that cannot be accounted for by the local absorption or fixation of circulating antibodies. The experiments, therefore, give no support to the current hypothesis that the main or sole site of antibody formation is in the reticuloendothelial system. They do not, however, rule out the possibility of antibody formation by this system.

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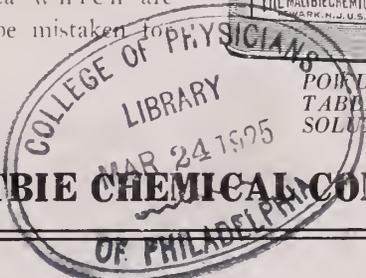
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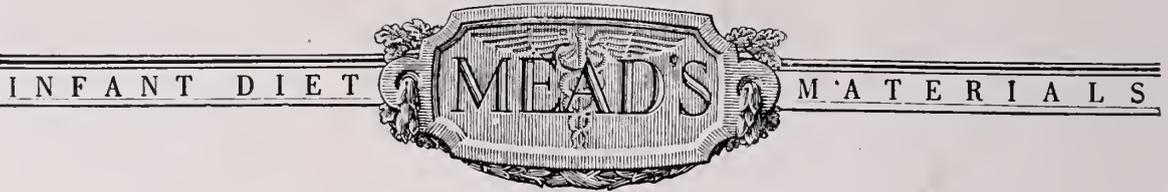


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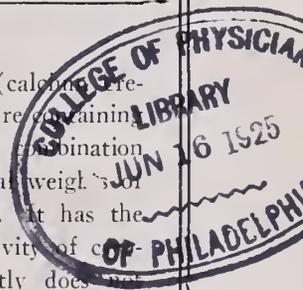


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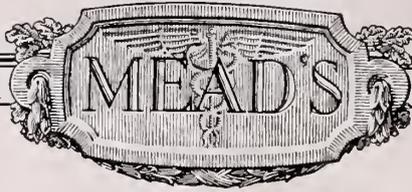


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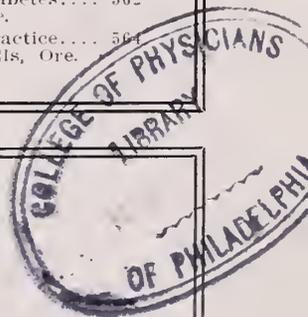


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# Feeding Babies in Winter

Neither cow's milk nor breast-milk contains sufficient antirachitic power to protect all infants from RICKETS.

Also—during the winter months, babies are usually not exposed to a sufficient amount of sunlight to prevent RICKETS.

The prescribing of MEAD'S STANDARDIZED AND BIOLOGICALLY-ASSAYED COD LIVER OIL by the physician is one of the most valuable safeguards against RICKETS.

MEAD'S is not an ordinary COD LIVER OIL. Every step in its preparation, from the time the fish are caught until the oil is finally tested and bottled, is scientifically controlled. Its purity and potency is guaranteed.

*Samples and literature furnished  
immediately on request.*



### *The Mead Policy*

Mead's Infant Diet Materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.



MEAD JOHNSON & COMPANY, Evansville, Indiana, U. S. A.  
*Manufacturers of Infant Diet Materials*

