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# AMERICAN VETERINARY REVIEW

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EDITED AND PUBLISHED BY

Prof. A. LIAUTARD, M.D., V.S.

*Foreign Corresponding Member of the Central Society of Veterinary Medicine (Paris),  
Honorary Fellow of the Royal College of Veterinary Surgeons (England).*

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VOLUME XIV.

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# AMERICAN VETERINARY REVIEW,

APRIL, 1890.

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## EDITORIAL.

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ONE YEAR OLDER.—Our past work—the REVIEW is the veterinary organ of the country—our efforts to make it what it is—the progress made by the profession impose upon us duties that must be fulfilled—our increased size in the future. VETERINARY SCHOOLS COMMENCEMENTS.—The publication of their *comptes rendu* is a duty to the graduates—special events only deserve special notice—the last exercises of the American Veterinary College—the communication from the French government—the text of the dispatch and its meaning—American veterinary profession recognized in Europe. ARMY VETERINARY LEGISLATION.—The bill before Congress—our hopes of its passing—slow recognition in Europe—the success of the bill is a great step for the advancement of veterinary science in America. MORE ROOM FOR QUACKS IN THE STATE OF NEW YORK.—A new law before the Legislature—the law of 1886 almost annulled by it—or at least its good effects destroyed—how long will this last—who will look after the execution of the law. ACTINOMYCOSIS.—The subject before the State Board of Live Stock Commissioners in Illinois—veterinary opinions on its contagiousness. NOTICE.—To our subscribers.

ONE YEAR OLDER.—We are on the threshold of our fourteenth volume, and it is with no little pride that we call the attention of our friends to this fact, and express the gratitude, with which we acknowledge their co-operation and aid. For the thirteen years which have elapsed since Professor Lyman presented the motion before the United States Medical Association which gave birth to the AMERICAN VETERINARY REVIEW, we have endeavored to fulfil the obligations which we then assumed, and to do full justice to the requirements of our calling. Whether we have done our duty and succeeded in accomplishing our aim, we leave it to the years of our continuance to testify. Of course we do not

desire to assume the entire credit of the success which has crowned our efforts. This must be proportionately shared by our friends, our subscribers and our contributors, to all of whom it is in varying measure due. And yet, not to be oppressively over modest, we would not have the fact ignored that it has been personally our hope and endeavor to succeed in making the REVIEW *the veterinary organ of the country*.

It must not be supposed that we are satisfied with the result which has been thus far attained, and that we shall be content in the future to wear only the laurels we may have already won, without reaching after new wreaths. We must improve; we must keep abreast with the progress and pace of the profession; we must extend our field; as American veterinary science advances, we too must go forward. We have in the past made many sacrifices. Labor, study and expense have been of no consideration with us, and it is our determination that the future shall not only be as the past, but shall aspire to still higher and better performances. We have called on our colleagues, and on every private practitioner in the country for their co-operation, and we have been liberal in our offer to all the veterinary societies in the land, of the hospitality of our columns, and not without promising them something adequate in return. We have, in fact, done what has never before been done in scientific, and specially in veterinary journalism.

With the present number we make an increase of several pages to the dimensions of the REVIEW, nor in assuming the supplementary cost and labor which this will necessitate, do we take into consideration the deficiency which is to-day exhibited by our books, of thousands of dollars which subscribers and other neglectful "friends" have omitted to contribute to our exchequer—where it belongs. With all this we ask no more than that each member of the veterinary profession will remember what we have often said, and repeated in our March number, to wit, that the REVIEW ought to be and shall be *one for all*. And now, will not the veterinarians of North America in response, match this good motto with the transposition of "all for one," and thus help the REVIEW to

become the veterinary authority of the Western Hemisphere? It is for the veterinary surgeons of the country, those in private practice as well as those in official Governmental positions, whether Federal, State or city, and for our public veterinary societies to answer and decide in this matter. We are but their organ.

VETERINARY SCHOOL COMMENCEMENTS.--The time has arrived for the annual closing exercises of some of our veterinary colleges, and these events will, (usually) of course, be reported in our columns. The REVIEW publishes these records as they are received from those having the matters in charge, and if they fail to appear, it is not because we desire it to be so, nor because we have not solicited the privilege of giving them publicity, nor, again, because we have not been asked to print them, but simply because we have not been honored with the necessary documents. In ignoring the REVIEW by thus suppressing a matter of public interest, the officers of the college we allude to, do no harm to us, and we think are reaping no benefit for themselves, but it cannot be questioned that they are inflicting an injury which must inure, to their own disgrace, upon their own graduates and alumni. It is not our intention, nor would it be proper for us to make any special reference to any designated school, and our reports of the events which may transpire at a commencement must be limited to the recital of the actual transactions of the occasion and extend no further. And yet, this rule has its restriction, and when a subject of general character and of special importance has been brought forward, the discussion and development of which would be likely to be of importance and advantage, not to any designated school, but to the profession at large, it would, in our view, constitute a breach of duty on our part to withhold a proper mention of it from the public. Such a case as this occurred at the commencement of the American Veterinary College which took place on the 5th of March, and which proved to be the occasion of a special communication from the French Government, in which it was stated that the diplomas of that school were to be recognized by the French veterinary schools

to such an extent as to entitle their possessors certain special privileges.

This might be considered by an inattentive and superficial observer to be simply a special distinction conferred on a special school. But to us it means much more than this, and we discern in it a gratifying and honorable recognition of American veterinary education and American veterinary science, at the hands of those who are pre-eminently the pioneers and workers of veterinary medicine at its birth-place and home. It is true that certain restrictions accompany the recognition, but notwithstanding this, it constitutes such an admission of the fact, that American veterinary schools of meritorious character and established standing, may be proud of it, and of which their alumni will, it is to be hoped, take advantage as an inestimable opportunity for post-graduate education. The following is the translation of the communication made by Mr. J. Dupas, the Chancellor of the General French Consulate in New York, a copy of which is now in the archives of the American Veterinary College:

*No. 10.—Upon the request of Mr. Liautard, one of the Trustees of the American Veterinary College, the Minister of Agriculture has decided that the holders of the diploma of that institution shall be in virtue of this degree, authorized to compete for the diploma of the French schools, after having passed in that institution the time which shall have been assigned to them, according to their degree of education, by the Council of the professors of the school in which they may desire to graduate.”*

ARMY VETERINARY LEGISLATION.—At length the army veterinary bill is in Congress, and we hope has been by this time reported to the House by the committee having it in charge. We have encouraging accounts of its chances, there being, as we learn, a fair probability of its passage, not, perhaps, in its original form, but with modifications of comparatively little importance, referring mainly to the number of veterinarians to be appointed. Whatever may be the form in which it passes, it will be sure to be appreciated and accepted

by the profession at large, and however its provisions may fall short of their desires, it will be welcomed as an evidence of the solid progress which has been achieved, and the improvement of the standing of the veterinary profession in all its various branches. If to-day, the rank of the European veterinarians extends from that of Second Lieutenant upward to that of Lieutenant-Colonel, it must be remembered that it was only by slow degrees and after many years of striving, backed by the influence of very influential men, that this recognition was effected. Even in France, this arrangement dates only from 1884, and was only secured by long years of persistent and patient effort. If we succeed this year in Congress, and find our army brethren at once assimilated to the rank of commissioned officers, with proportionate and corresponding pay, a long step will have been taken, and much honor will accrue to those whose efforts for the advancement of veterinary science and the elevation of the personnel of its practitioners in intelligence and social status has made such a thing possible.

**MORE ROOM FOR QUACKS IN THE STATE OF NEW YORK.**  
—The veterinary profession in the State of New York occupies a position and presents an aspect which must suggest peculiar thoughts in the mind of an intelligent and curious observer. While it was in her great metropolis that American veterinary science found birth and made a stand; while in that great city of New York this science has, we may be allowed to say, started and given origin to everything related to it which means progress; while the capital of the Empire State can boast of more than one institution for veterinary education, and lastly, while her's was the first State Legislature to enact a partially good law for the regulation of veterinary practice, she seems to be content with what she has done, and to have made up her mind to rest satisfied with her past efforts and her past glory. Up to a recent time she was probably the only State where no veterinary society existed, and she seems to have become somnolescent to the good which she once obtained by her legislative action, and almost willing to surrender her laurels without further fight or

struggle. A law requiring proper qualifications in veterinary practitioners was passed *four* years ago, and since then, almost every year, amendments have been tacked on, until the original intent of the law has been essentially smothered, and its object no longer attainable. A fourth project is now in hand in Albany, if it has not already passed the Legislature, by which an extension of time is allowed for those who have neglected to register as the law of 1886 required. At this rate, quackery may hope to flourish in New York for a term quite indefinite. Is it not time for some reputable body to take the matter in hand and put an end to this disgraceful legislative interference with veterinary progress?

ACTINOMYCOSIS.—Although this disease is comparatively rare in Europe, it cannot be so considered in America, where years ago its frequency had given an opportunity for its recognition, and for its comparatively easy diagnosis when subsequently met with. This fact of its frequent occurrence has recently brought up the question in Illinois, of the fit condition of the meat of animals thus affected, for general use as food, before the Cattle Commission and Health Board of that State, where the matter was becoming one of serious import. The State Board of Live Stock Commissioners took the question in hand, and communicated with sundry veterinary authorities of the country upon the contagiousness of the disease, and the status of the meat for general use, and the question seems to have been settled by the agreement of all the advisers, in the verdict that the disease can be considered as contagious, and that all affected, meat is unfit for use as food. The report of the State veterinarian and his assistants, which we reprint in our present number, describes the condition of the animals which had been examined, and proves the correctness of their diagnosis and the wisdom of the conclusions to which they were brought.

NOTICE.—We have the honor to remind our subscribers whose subscriptions expired with the March issue, viz., the last number of the thirteenth volume, that we shall draw on them during the month of May for the amount of their subscription to the fourteenth volume. Those who may desire to discontinue will kindly inform us at once by postal card.

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## ORIGINAL ARTICLES.

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### ACTINOMYCOSIS.

BY J. SCOTT, V.S., Peoria, Ill.

A Paper read before the Illinois State Veterinary Association.

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In choosing this subject for my essay to-day I did not do so thinking to bring out anything new or original in regard to the disease; and as the literature on the subject is rather meagre, I hope you will excuse the brevity of my remarks. To a paper on this disease published in pamphlet form, by Dr. George Fleming, also one by Dr. George A. Bodamer, published in the *Journal of Comparative Medicine and Surgery*, I am indebted for the most of my quotations, and these articles, together with my personal observations of the disease, will form the basis of my remarks.

An erroneous idea prevails among people in general, and veterinarians also, that this disease occurs only in a sporadic form, and that few cattle are affected with it. But when I state that here in Peoria there have been over two hundred cases of it during the last six months, that at the stock yards in Chicago there is an average of from seventy-five to one hundred cases every month, at the Kansas City stock yards about the same number, and at other cattle centres throughout the country about the same percentage of cases in proportion to the number of cattle handled, it will be seen that it is prevalent to a far greater extent than most people imagine, and though there has been considerable publicity given to the subject through the medium of the press, more especially the Chicago press, during the last few months, yet I imagine that were the general public aware that the disease exists to as great an extent as it does and knew the true character of the disease, public opinion on the subject would be such that it would demand that the most stringent measures be adopted for its suppression and prevention.

A number of the most eminent pathologists and microscopists of the present time have demonstrated, by scientific

experiments, that the disease is capable of being transmitted by inoculation from one animal to another. Hence, if the morbid material transplanted from a diseased to a healthy animal will produce the characteristic lesions of the natural malady, there can scarcely be any reason to deny the possibility of its being transmitted accidentally, or by cohabitation. And it is the general opinion at the present time, of nearly all parties who have investigated the subject to any extent, that it is a contagious disease, and not only transmissible from one animal to another, but also from animals to men.

The disease is caused by the invasion of a vegetable or mould fungus, but differing from all other known fungi in the radiating arrangement of the mycelia composing it. From its radiating structure, and its being found at first in the ox tribe, it received the name actinomyces, and it is the only fungus belonging to the class of moulds that has been found in the interior of animal tissues.

The fungus itself is of a pale yellow color, varying in size from that of a linseed down, until it can hardly be detected by the unaided eye. They may be found singly but more generally in groups or tufts.

In the actinomycotic tumors they are constantly found, and from their irritating and disintegrating influences set up destructive processes in the tissues, which sooner or later, end in death, unless the fungus loses its power or is removed.

By the section of an actinomycotic tumor the typical character of the fungus is best displayed. Imbedded in the fibrous stroma of the growth are noticed various sized nodules of a cheesy softness, in the centre of which are the characteristic yellow particles which are the actinomyces, often projecting above the cut surface enough so that by passing the finger over it they can be distinctly felt, being of a slightly harder consistence than the surrounding tissue.

As to the manner in which, and the channel by which the fungus enters the body and invades the tissues, there is yet no satisfactory evidence. It is, however, probable that it enters in the form of spores, through a wound or abrasion, or even by means of the delicate mucous follicles of the membrane



lining the lips, mouth, pharynx and nostrils, or in fact, any part of the digestive or respiratory passages.

It has been shown that it may exist harmlessly in large numbers in the tonsilar glands of the pig probably waiting for a casual abrasion of the mucous membrane, in order that it may rapidly develop in the tissues beneath. Such an injury may be inflicted in various ways, and very likely by the food upon which the animals most liable to the disease are fed.

It has been noticed by some practitioners in England that the malady is most frequent after cattle have been fed on barley straw and chaff, and this may not only injure the mouth but serve also as the vehicle for the transmission of the fungus, straw being so often mouldy and infested with vegetable parasites of various kinds.

After having once entered the animal's body, the extension of the fungus is progressive by means of its spores, which are disseminated, localize themselves, and produce the characteristic changes in their surroundings. These spores may find their way into the œsophagus, stomach, intestines, bronchi, lungs, or in fact, almost any of the internal organs or tissues, and there produce the disease unless, as sometimes happens, spontaneous recovery takes place, owing to the fungus losing its vitality through diminished nutritive supply from retraction of the connective tissue surrounding it, and its becoming encapsuled in lime salts.

As I have just stated, the fungus after gaining access to the system may become localized and produce the characteristic lesions of the disease in almost all parts of the animal's body. The different situations in which it has hitherto been observed, are the bones of the jaw, both upper and lower, the submaxillary space, and region of the parotid gland and throat, the tongue, nasal chambers, pharynx, larynx, œsophagus, stomach and intestines, the lungs, the skin, and the submucous, and intermuscular connective tissue.

It is generally supposed that the jaw bones are the parts most often attacked by the disease, but in the majority of cases which I have had an opportunity of seeing, the regions of the parotid gland and throat have been the parts most

often affected. When occurring in these regions the first symptom noticed will be a small swelling, scarcely ever involving the whole gland, but generally just involving its lower border. This swelling generally increases quite rapidly in bulk, and in some cases attains an immense size.

One characteristic feature of these swellings is their peculiar density and hardness. Sometimes suppuration takes place in their centers, and if not opened up, will rupture spontaneously, and allow the contained pus to escape, but a true actinomycotic tumor or abscess whether it ruptures spontaneously or is opened artificially will scarcely ever disappear entirely, and in this respect it differs from any other kind of a tumor or abscess containing pus that I have ever seen, for we all know that a simple non-malignant tumor or abscess when opened up so as to allow the contained pus to escape, will disappear, and the tissues composing and surrounding it will soon regain their normal condition, but in actinomycosis after the pus has escaped, and the opening healed, there still remains a hardened and enlarged cicatrix, with a base or root running from the cicatrix into the inner tissues, showing that the disease, though apparently cured, is only slumbering and waiting for a favorable opportunity to again break forth, or the fungus still remaining in the tissue may be taken up by the lymphatics, and conveyed to some other part of the animal's body, there to become localized and form a new nucleus for the disease.

I have now spoken of cases where the parotid gland was only partially involved but I have seen a number of cases where the whole gland was affected, the swelling in some cases being enormous, some of them being fully as large as a wooden bucket, the whole external surface of the swelling being raw, and penetrated by numerous fistulous openings, discharging a thick yellowish pus, the poor animals presenting a most loathsome appearance.

When occurring in the bones of the jaw, the first noticeable symptom will be a small circumscribed swelling, but the animal will evince no inconvenience from it unless the part is struck or pressed upon. The enlargement however increases in size, and the animal will begin to evince some pain. In some

cases the growth is quite rapid, and in a few months the disease may have invaded the larger part of one-half of the upper or lower jaw, and give rise to severe symptoms, caused chiefly from disturbed mastication and pain.

This form of the disease is accompanied by abscesses and fistulæ, sometimes opening into the mouth, but generally opening externally. When the tongue is the seat of the disease, there are seen to be a more or less number of prominences, on the dorsum most frequently, on one or both sides, or even over its whole surface. These look like nodules or tubercles, or sometimes like warty excrescences flattened on top, varying in size from a millet seed or pea to a bean. They may be single or in clusters, and the tongue somewhat enlarged, indurated, and more or less ulcerated in one or more places, or there may be cicatrices present from previous ulcerations. There is degeneration more or less marked, of the muscular tissue, which is rather pale in color, and in the peculiar yellowish white nodules which are seen scattered throughout the tissue, will be found clusters or tufts of actinomycis. The gums, cheeks and palate may also be involved in the disease.

In the fauces the disease generally appears in the form of new sub-mucous formations, or polypi, which present the same features histologically as the nodules on the tongue.

Similar tumors to those observed in the fauces are found in the region of the epiglottis and larynx.

In the œsophagus, stomach and intestines, the muscular and sub-mucous connective tissues are the parts invaded by the disease, and it shows itself by the formation of nodules and tumors which on section are seen to contain the actinomyces.

When the disease is localized in the lungs, various changes take place therein, but as it is generally very insidious in its development, and seldom occurs in a very acute form, the disease may have progressed to a considerable extent, and have produced considerable changes in the lung tissue before any constitutional symptoms are presented.

In the first stages the lung tissue will be found to have still retained its elasticity, but is of a whiter color, and more firm than in health. On the cut surface, and even on some

parts of the external surface, will be seen numberless minute tubercles or nodules, about the size of a millet seed or larger, and in the centers of these nodules will be seen minute yellowish bodies, being the actinomyces.

They generally project a little above the cut surface, so that by passing the finger over the cut surface, or taking a thin piece of the tissue between the fingers and pressing on it, the minute actinomycotic bodies may be distinctly felt, being of a denser and harder consistency than the surrounding tissue.

Were it not for the presence of the actinomycotic fungus, with its peculiar characteristic features, these nodules would seem very little different externally, especially to the unaided eye, from the ordinary gray tubercle, which becomes developed into the yellow tubercle. In other cases the disease may produce much more serious changes in the lung tissue than those I have just mentioned, one case in particular at which I had an opportunity to assist in conducting a post mortem examination, showing that almost the entire mass of lung tissue was involved in the disease, the normal tissues being almost entirely obliterated by masses of actinomycotic tumors and abscesses, some of the abscesses containing several ounces of a thick yellowish white creamy pus. The parts invaded by the tumified masses were of a whitish color both on the external and cut surfaces, and much firmer and denser than healthy tissue, and on section the characteristic fungus were present in great numbers, and plainly visible even to the naked eye.

This, gentlemen, concludes my remarks on the disease, except in regard to its sanitary importance, and the question as to the fitness or unfitness of the flesh of animals affected with the disease for public consumption.

Though there is almost universal unanimity of opinion regarding the unfitness of such meat for human consumption, yet there are always a few people outside of the individual cattle owners, who claim that it is not unfit for food, and that the disease is not contagious. If it is not contagious, I would like to know how they account for the fact that during the last six months, in the Peoria cattle barns, there have been over two hundred cases of this one disease, while the losses from

all other diseases put together, not including injuries, has not been, I believe, one fifth as much.

Individual cattle owners, who are of course financially interested, will tell you that the meat is healthy and all right, because after an animal is killed and dressed the meat shows no evidence of the disease. If all meat inspection was carried out on this plan, and if the general public had to depend on the purity and healthfulness of their meat supply from such a mode of inspection, what would be the result? People would be eating the germs and spores of disease every day, for it is a fact that an animal may be suffering from various different forms of disease, more especially if the disease is not of an acute nature, and if properly bled and all the internal organs and offal removed, leaving nothing but the bare carcass to judge by, the meat in its general appearance to the naked eye may present no symptom of unhealthiness, while under the magnifying powers of the microscope it may prove to be swarming with the germs of disease. Hence such an examination does not prove, as they would like to have you believe it does, that the flesh of an animal suffering from the disease is sound and healthy, and fit for human consumption.

If Actinomycosis were a local disease, and confined altogether to the bony structures of the head, there might be some truth in such a line of argument, but post mortem examinations conducted in a fair and impartial manner on animals that showed very little evidence of the disease locally, and presenting in other respects a general appearance of health, revealed the fact that the germs of the disease were present in one or more of the internal organs, and this fact in itself should be sufficient evidence to prove conclusively to any fair and impartial mind that it is not a local but a general disease. As to the manner in which these germs are conveyed to the different parts of the animal's body, it is most probably through the medium of the circulations, and hence it is unreasonable to suppose that disease germs can be floating in the blood without some parts of the muscular tissue as well as some of the internal organs becoming contaminated, thus rendering the meat of such animals not only unfit, but unsafe for human food.

## COAL-OIL POISONING IN THE HORSE.

BY S. H. KINGERY, V.S., LAMOILLE, ILL.

A paper read before the Illinois Veterinary Medical Association.

The following case occurred in my practice, and not having seen a similar one recorded, I thought it might prove interesting to the profession at large.

On August 16, 1889, I was called to see a sorrel saddle-horse, aged nine years. On entering the stable I was struck by the appearance of the animal. His coat was staring, nostrils dilated, ears lopping, and countenance anxious. There were slight purging and anorexia, some tenesmus and pointing toward the abdomen. The breathing was rapid, and there was a spasmodic cough at intervals of about five minutes, accompanied by dribbling of a ropy saliva from the mouth.

Inquiry elicited that, owing to the cough, the horse had been worked but slightly; and the attendant had tried, about ten days prior, to administer a pint of kerosene; he succeeded in getting about one-half of it down, and seeing no ill results, on the 14th he administered another pint which the horse took.

I at once made a careful examination of the case and found the following symptoms: Respirations, 38 to 44; pulse, 96, thready and nearly imperceptible, irregularity well marked; temperature,  $105\frac{2}{5}$ ; ears and extremities cold, Schneiderian and buccal mucous membranes, reddened in patches; pupils, somewhat contracted. There was great prostration and the horse stood with his head down, his ears drooping and his eyes half closed, as if in a comatose state, but would rouse up when spoken to. There were slight watery discharges from the eyes and nostrils, and shreds of mucus in the fœcal matter. The urine was dark colored and both it and the fœces had the characteristic odor of coal oil.

There was a double motion of the flanks during expiration; auscultation revealed a low wheeze at the posterior part of the chest; resonance, somewhat increased on percussion; the animal could hardly be moved out of a walk.

I at once diagnosed a case of coal-oil poisoning, and knowing no special antidote, the effects of the poison were combatted on general principles.

I first gave *ol. lini*, both as a drench and an enema; *ext. cannabis ind. fl.* twenty drops every three hours; *ext. verat. vir. fl.* thirty drops every four hours; *spts. aeth. nitr.* as a stimulant and *potas. acetat.* as a diuretic; friction to the legs, bandages, drenches of milk and eggs.

August 17,—Temperature,  $106\frac{1}{5}$ ; pulse, 102; respiration, 40. Changed *cannab. ind.* for *hydrastis can.*

August 18,—Temperature,  $105\frac{2}{5}$ ; pulse, 84; respiration, 36; drinking and eating some.

August 19,—Temperature, 107; pulse, 84; respiration, 40. With the owner's consent I called in Dr. Story, of Princeton, to consult with, as the case now seemed a desperate one.

We agreed to increase the dose of *verat. virid.* to two-dram doses every four hours, combined with *quin. sulph.* in dram doses; to give bland drinks, and continue drenching with milk and eggs.

August 20,—Temperature,  $105\frac{4}{5}$ ; pulse, 60; respiration, 32; animal feeling some better, appetite returning, bowels and kidneys active.

August 21, 10:30 A.M.—Temperature,  $103\frac{2}{5}$ ; pulse, 48 and full; respiration, 30; animal walked out in the yard and rolled. I was somewhat alarmed to find him staling profusely, until I found he had had access to a salt barrel and had drank freely of water. 4:30 P.M.—temperature,  $101\frac{4}{5}$ ; pulse, 46; still staling.

August 22,—Temperature, 103; pulse, 48; respiration, 26; kidneys normal, urine voided every four to six hours. I discharged the case.

Being called to the same place September 8, I found him eating his full rations, and able to trot around the yard.

September 22, I saw him again and found they had ridden him after cattle the day before and he had performed his work with ease.

N. B.—Since writing the above, I have run across the following report of the physiological symptoms produced by ex-

cessive doses in man: "It has caused oppression, palpitation, faintness and headache but no tendency to stupor. In one case, frightful tonic and clonic convulsions occurred. The pupils are contracted, skin is hot, respiration hurried.

It is remarkable that it does not produce vomiting, nor usually diarrhoea. In one case death is said to have occurred with symptoms of gastro-enteritis, on the twentieth day after the oil was taken. The urine has a peculiar aromatic odor."

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## THE USE OF ANÆSTHETICS.

By J. F. REID, V.S., Decatur, Ill.

A paper read before the Illinois State Veterinary Association.

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*Mr. President and Gentlemen :*

Up to the past year there has been the greatest difference of opinion regarding the mode of administration and the value of anesthetics in veterinary practice, but since the surgical experiments for the cure of roaring (the character of which necessitating a condition of the patient only to be obtained by anesthetics), the operators were compelled to experiment on the safest, quickest and most economical method of obtaining this result. From these and other observations, the general profession has learned more during the past few months than in many years before.

Formerly, the humane surgeon dreaded difficult surgical operations, being compelled to witness the excruciating pain that he inflicted on the animal, and at times fearing serious injury to, and being embarrassed in his operation by the terrific struggles of the patient.

Now I think it has been satisfactorily demonstrated that the dangers of anesthesia are not nearly so great as those to be feared from the powerful struggles of the animal, and when we consider and add to this the wonderful advantage to the operator, we must come to the conclusion that the surgeon neglecting the use of this important factor, does a great injustice to his patients and to himself.

Anesthesia is generally divided into four stages. The first is employed where anodyne and anti-spasmodic effects



are desired, the second to moderate excessive labor pains, and the third where serious surgical operations are to be performed. This stage may be maintained with care for several hours. After complete unconsciousness takes place, if the inhalation is continued, the respiratory centre becomes paralyzed, respiration ceases, the heart's action loses force, and finally stops altogether. The dangers of anesthesia depend on an over-dose of the agent, or in some instances from sudden collapse during the first few inhalations, (due, probably, to some organic change in the heart or lungs) and on suffocation from blood or other matters getting into the trachea.

There are a great many substances of so volatile a character that they can be employed in producing anesthesia, but of the many, there are but four that are in common use, viz.: alcohol, ether, chloroform and nitrous oxide, and in practice the first three are only used either alone or mixed in various proportions. Careful experiments have demonstrated that where combinations of chloroform, alcohol and ether are poured on an inhaler, the most volatile spirit will rise first, then the next, leaving the least-easily evaporated on the inhaler. This should always be considered and the same precautions observed as in the use of either agent alone. Alcohol is only used in combination with ether and chloroform.

With the medical profession, there has probably been in America more opposition to the use of chloroform in favor of ether than in any other country, but there seems to be a change lately in favor of chloroform, from the fact of so many fatalities occurring where patients were affected with kidney trouble, and this being the case with so many where there was not even a suspicion. This reason does not prevent its use in veterinary practice, but the difficulty of producing anesthesia, which is also experienced in some instances by the most careful and competent human administrators who are finally compelled to resort to chloroform. Another reason is the danger of bronchial and pulmonary irritation following, which the horse is particularly susceptible to. It is dangerous to administer the vapor in as concentrated a form as that of chloroform. These should not be administered to patients

affected with hypertrophy of the heart, valvular lesions, fatty heart or where there is limited action of the lungs from emphysema, old pleurisy, or irritation of the mucous membranes with excessive secretion.

Taking into consideration the very few unfavorable results that have occurred from the administration of chloroform to horses, (not a single fatality having been recorded in Great Britain that I have seen among the great many that have been operated upon for roaring) together with the cheapness and ease with which anesthesia is produced, makes it the anesthetic for the veterinary operator. Indeed I have found it quite a difficulty to destroy a horse with chloroform, and Dr. John Moore, of Manchester, England, mentions in the *Veterinary Journal* of March, 1889, an effort of his to destroy a mare suffering from diseased liver and ulcerated stomach. He writes "that the mare had practically eaten nothing for a month or more, was very emaciated and weak, and being unable to rise, was ordered to be destroyed. I administered an ounce and a half of chloroform every quarter of an hour for an hour and a half, and finding at that time that she possessed a fairly full pulse, and which was maintained throughout, I destroyed her by pithing, not however, before she began to show signs of returning consciousness." Although I do not advise its indiscriminate and careless use, yet this and many similar observations prove that the untoward results that have been feared are to a great extent imaginary.

The old theory of free dilution of the vapor with atmospheric air, has been completely revolutionized. Under the old method with a calculated dilution of twenty parts to one, it was an expensive and prolonged effort to obtain the desired result. Indeed many have given it up in despair and disgust, after nearly wearing themselves out, and being in more danger of succumbing to the anesthetic than the patient. Now all is changed, for with the proper knowledge and appliances (which admit as little air as possible) and from one to four ounces of the drug in from two to eight minutes, we can have the animal satisfactorily unconscious and ready for the operation. After this condition is produced, I usually remove the

tray or open the slide and allow the admission of air, removing the vapor if necessary to prolong anesthesia, which can be done with care for a surprising length of time. I have observed that during the first few inhalations, the pulse is usually much accelerated, but it slows down full and strong after. There seems to have been no untoward results from not preparing the patient, but I think it is certainly advisable to restrict the diet for twelve hours prior to the operation. In nervous horses undoubted benefit is derived from the administration of an opiate before the operation, either by the mouth or hyperdermically.

I will not tire you with a description of the mechanical securing of the animal, and the administration of the drug, which has been so ably and fully treated by Dr. Fleming, Prof. Axe and others.

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## BOVINE TUBERCULOSIS.

BY DR. E. F. BRUSH.

(Résumé of a Paper on the "Coincident Geographical Distribution of Tuberculosis and Dairy Cattle," read at Albany, at the meeting of the State Medical Society, February 5, 1890.)

The Doctor began by stating that if he could show by reputable authority that the geographical distribution of human tuberculosis coincides with that of the bovine diseases, the inference would be that they stood to each other in the relation of cause and effect. In studying the geographical distribution of pulmonary consumption, the necessity for separating imported from indigenous cases in any table of statistics was absolute in order to reach any conclusions as to the habits of the people and their effects with reference to the disease. Many other diseases are conveyed to the human race by animals where no doubt exists, but in the case of tuberculosis the slow development of the disease is a disturbing factor. The danger of animals being infected by man is exceedingly small; the danger of man's being infected by animals is practically the only danger, and this can be avoided. He thinks that the proposition for isolating human consumptives is

leading us away from the chief danger. He shows that in lands like Egypt the indigenous inhabitants retain immunity while associating for long periods with consumptive immigrants ; while on the other hand, in regions like Australia and the Sandwich Islands, the inhabitants have become infected after the introduction of dairy cattle. The best dairy cattle breeds, he argued, are the tubercular breeds, while some breeds not classified by the breeder as dairy cattle are exempt from tuberculosis, owing to their vigor and health. In all dairy countries the prevalence of tubercular consumption is a settled fact, while the only countries at all in doubt are those where the dairy consists of other than our domestic cows. Referring to China he spoke, of the pure Chinese as a people who did not use milk, while the Tartars in that country were meat and milk consumers, and therefore the observations of medical men are very confusing, and they confess that they cannot understand why the disease prevails among the dominant Tartar class and not among the poorer Chinese, who, according to all pre-conceived notions, ought to be tubercular. In South America, where cattle are exceedingly numerous, but the use of milk almost unknown, or used only after being boiled, the natives still enjoy an immunity. The Doctor, then taking a geographical square of ten degrees, embracing Spain and Morocco, contrasted the two countries, as the climatic conditions must be pretty nearly equal, but Morocco, where there are no European dairy cows, is exempt from tuberculosis, while in Spain and Portugal, where dairying is carried on in the European style, tuberculosis prevails. The Doctor ended by saying, as a physician and as a cattle breeder, that there was no great necessity for a disturbing alarm, because the benefits conferred upon us by the bovine race far outweighed the burden of disease. If there were no way of remedying the disease he would be decidedly in favor of letting affairs remain as they were. He expressed, however, a strong opinion that dairy and beef cattle could be bred in such a way as to eliminate tuberculosis, but that that could only be done by increasing the price of both beef and milk.

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## INFLUENZA.

BY T. D. HINEBAUGH, M.S., V.S.

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SYNONYMS :—*Epidemic Catarrh* ; *Epizootic Catarrhal Fever* ; *Panzootic Catarrhal Fever* ; *Distemper* ; *Epizootic*.

Influenza in its various forms has been recognized for centuries, and prevails to a greater or less extent, at all times and at all periods of the year, and in all countries where horses are used. Its character varies somewhat with the season, it being more severe at some seasons of the year than at others.

DEFINITION.—Influenza is essentially a contagious and infectious febrile disease, involving few or many organs of the body, such as the lungs, pleura, heart, liver, spleen, kidneys and intestines. It also attacks the joints, in some instances proving very serious. Its virulence will vary according to the organ attacked, also with the extent of the disease. Ill ventilated stables, or stables where the surroundings are bad, greatly increase the severity of the disease, and are often the immediate cause of the death of animals from this affection.

CAUSES.—Influenza is due to the introduction of a specific micro-organism, the true nature of which is as yet little understood. Influenza prevails on every kind of soil and geological formation, at all seasons and temperatures ; however, it more often exists during autumn, winter and spring, than during the summer months ; atmospheric conditions have no direct influence in producing the disease, but may increase its virulence.

PREDISPOSING CAUSES.—Although the disease is a contagious and infectious one, yet there are conditions which render the animal more susceptible to the action of the virus, among which are damp, ill ventilated or overcrowded stables ; age plays an important part, young horses suffering more frequently than aged ; bad food ; over work ; neglect of every description ; change of climate and change of location, as from the country to the city and vice versa ; changing from the pasture to the stable, especially if poorly ventilated, or from the stable to pasture. The greatest cause, however, is com-

ing in contact with other horses suffering from the disease. Any condition which will render the system more susceptible to an attack of the germs which produce the disease acts as a predisposing cause, and should be carefully guarded against. When present it aggravates the disease, if it exists, and is often directly responsible for the death of the animal.

COMPLICATIONS.—The catarrhal form, where there is only a discharge from the mucous membrane lining the nasal passages, throat and windpipe, constitutes the simplest or uncomplicated form, and is the one present in most instances. Besides this form there may be present complications of the lungs (pulmonic), of the stomach and intestines (gastric), of the liver (hepatic), of the kidneys (renal), of the eyes (ophthalmic), and of the joints (rheumatic). In addition to these forms, the nervous system may be implicated, giving rise to convulsive fits and coma. We have also known influenza to settle in the fore feet and induce navicular arthritis (coffin joint lameness) causing a permanent lameness, which continued during the life of the animal.

RESULTS OF INFLUENZA.—When the termination of the disease is unfavorable, either death results, or some organ of the body remains permanently disabled. Blindness occasionally succeeds an attack of influenza, becoming permanent. Animals affected in this manner should not again be used for breeding purposes, for the defect is liable to be transmitted to the progeny, and produce another unfortunate animal whose days must be spent in total darkness. When influenza attacks a certain organ of the body, it is the weakest one. It may have been originally weak, or may have been the result of some injury previous to the attack of the disease under consideration. In any case it is very difficult to arrive at a just conclusion, hence we should take no risks in breeding animals of this description. In many instances the respiratory apparatus remains defective, so that the animal cannot assimilate the proper amount of oxygen, and in consequence tires easily upon slight exertion, which no doubt has given rise to this expression, “ever since this horse had the distemper, he puffs and blows upon the slightest exertion.”

Roaring and whistling sometimes result from influenza. Lameness, as already indicated, is one of the results of this affection in exceptional cases. It is not always confined to the coffin joint, but attacks other joints, notably the knee. Chronic catarrh or nasal gleet remains after an attack of influenza, notably so if the mucous membrane of the sinuses of the head has been affected.

SYMPTOMS OF THE CATARRHAL FORMS.—Shivering usually precedes all other symptoms and lasts for a variable period of time, from one to six or eight hours, or even longer in some instances. This symptom often remains unnoticed. There is a dry, harsh, staring coat, the hair standing on end as it were, nose, ears and legs cold, with redness and at first dryness of the membrane (Schneiderian) lining the nasal cavities. The temperature is somewhat elevated; going as high as  $104^{\circ}$  F. (The normal temperature of the horse is  $100-101^{\circ}$  F. The pulse beats 34 to 40 times per minute, and the number of respirations is from 8 to 12 per minute). There is sneezing, associated with a hacking cough and shortly a discharge from one or both nostrils takes place. This discharge is at first thin, becoming thick and flaky as the disease progresses, and varies in color from a light yellowish, sometimes tinged with green, to a dark brown, and if it contains blood will be of a reddish color. The eyes are heavy, mucous membrane (conjunctiva) inflamed, sometimes yellow, accompanied by a discharge of tears which flow over the face. The symptoms increase in intensity for two or three days, the eyes becoming much inflamed, so much so that there may be imperfect vision or total blindness in some instances. This latter condition is more often present in the disease known as epizootic cellulitis (pink eye). Temperature gradually increases until it may reach  $106^{\circ}$  F. The cough now becomes deep, sonorous, painful, paroxysmal, convulsing the whole body, incurring much distress. The pulse is feeble and easily compressed, numbering from 50 to 80 beats per minute. The mouth hot and sticky. Thirst intensified, hanging of the head. Respiration increased, going as high as 15 to 20 per minute, or even more in cases where there is much exhaustion.

The above symptoms are often attended by much debility, so that the animal walks with a staggering gait, swaying from side to side. There may or may not be soreness of the throat.

The symptoms gradually increase until the third, fourth or fifth day, when they begin gradually to subside. The discharge from the nostrils becomes thicker, yellow and diffuse, the cough moist and loose, the pulse decreases in number and becomes stronger, respiration approaches the normal, swellings gradually disappear, and in fifteen to twenty days the animal recovers its former strength and again takes on flesh. Dropsical swellings (erroneously called farcy or fearcy by some), sometimes appear on the legs, sheath, belly and chest. They are not serious, however, for as strength is regained they gradually disappear. Most cases at first appear in the simple or uncomplicated form, and if properly handled will in most instances yield to simple treatment, but if allowed to continue unchecked may eventually terminate in some of the severest forms and induce death.

TREATMENT.—Attend to the surroundings and provide the best hygienic conditions, such as pure air and water, clothe the body comfortably with light woolen clothing and bandage the legs. If the animal can be placed in a good roomy box stall, so much the better. In winter the chill may be taken off the water by using hot water, but it never should be allowed to warm up in a room. Give plenty of good, nutritive, easily digested food, in small amounts at a time. Steam the nostrils by using a pail full of boiling water in which has been placed one ounce of turpentine and a teaspoonful of carbolic acid. Throw a blanket over the horse's head, place the pail underneath, and stir the water with a wisp of hay or straw. The steaming should be continued for twenty minutes at a time, and repeated three times per day, care being taken that the horse does not take cold. Dissolve a teaspoonful of powdered saltpetre in the drinking water three times daily. Two ounces of turpentine daily in doses of one ounce each, given in half a pint of raw linseed oil, will have a tendency to prevent an attack of purpura hemorrhagica, which sometimes is a sequel of distemper. If there be much fever, give quinine



in thirty-grain doses three times per day. If after the animal recovers from the disease there be a general weakness with swelling of the legs (anasarca), give the following as a tonic :

℞ Powd. Ferri Sulphas (Copperas),  
 “ Gentianæ, aa ℥ ij  
 “ Magnesiæ Sulphas (Epsom Salts). ℥ viij  
 M. *Sig.* Give a tablespoonful once a day in feed.

LARYNGITIS (Sore Throat).—Laryngitis may be and frequently is one of the forms of complication presented in this disease. It may exist as a simple affection or associated with the nasal form.

The throat begins to swell and become sore; the animal experiences much difficulty in swallowing, a portion of the water being returned through the nose while drinking, carrying with it in most instances flakes of pus. A portion of the feed is also sometimes ejected through the nostrils. There is a deep, painful cough, which is aggravated when the animal attempts to swallow. Pressure on the external surface of the throat produces the same effect. The swelling may increase to such an extent as to suffocate the animal, and induce death in that way. Increased respiration, secretions generally impaired, bowels costive and urine scanty. The mouth is generally hot, with a sticky sensation. In two or three days there will be a discharge from the mouth and nose and in acute cases it is a favorable sign. Laryngitis may terminate in whistling or roaring.

These latter conditions were present in a large number of horses, after the great outbreak of influenza in 1872.

TREATMENT.—Plenty of pure air is absolutely necessary in the treatment of this disease, as well as in all diseases of the respiratory tract.

If the legs are cold they should be hand-rubbed and banded. Give chlorate of potash in two-drachm doses three times per day in tepid water.

Apply to the external surface of the throat some stimulating liniment, equal parts of ammonia, turpentine and oil, or if there is danger from suffocation, apply an energetic blister to the throat, made up as follows :

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℞	Hydrag. Iod. Rub. (Red Precipitate),	ʒ ij
	Powd. Cantharides,	ʒ ij
	Vaseline, Cosmoline or Lard,	ʒ jv
M.	<i>Sig.</i> Rub well into the skin after clipping the hair.	

When a blister of this nature is applied, the best results are obtained by letting it alone. It is a mistaken notion that a blister should be washed off and the parts greased or oiled. If let alone until it sheds of its own accord, all possible chances of a scar will be avoided. The precaution to be observed when blistering a part, is to keep the animal from biting, scratching or rubbing the place.

Other complications of influenza are pneumonic and pleuritic, but not differing essentially from those diseases when they are of an independent origin, hence they will not be considered in this connection.

There is a complication, however, to which we wish to direct special attention, namely the rheumatic. It is often the source of great inconvenience to the animal, producing a peculiar lameness. It consists in an inflammation of the fibrous structures of joints, tendons, ligaments, the covering of the muscles, or of the heart, and is usually accompanied by more or less fever, stiffness and lameness. The lameness of rheumatism is of a peculiar nature, disappearing from one part of the body to reappear in another, without any appreciable cause, and may or may not be accompanied by swellings. If the parts are swollen they are usually hard and tense. This affection is usually the result of allowing animals to stand in a damp or cold stable while suffering from an attack of influenza. Rheumatism may also exist as an independent affection.

**SYMPTOMS.**—There will be sudden lameness in one or more joints, with or without swelling of some particular joint, such as the stifle, fetlock or neck, or the muscles of the sides of the chest. The lameness often disappears from one joint and reappears in another, and is often accompanied by a crackling sound. Very often the lameness is symmetrical, due to inflammation of the same joint in both legs, for example, two knees, two hocks, two fetlocks, two stifles, etc. More or less fever,

the temperature running as high as 104, 105, 107° F; over 105° F. in rheumatism is always considered very dangerous.

TREATMENT.—Give plenty of powdered nitrate of potash (saltpetre) in the drinking water, also give two drachms of salicylate of soda in one half pint of warm water, three times per day. Colchicum, 30 to 60 grains three times per day, also has a favorable effect.

LOCAL TREATMENT.—Apply warm fomentations to the swollen parts, following with a liniment composed of

℞	Distilled Extract Witch Hazel,	ʒ iv
	Fl. Ext. Belladonna,	ʒ ij
	M.	

If this affords no relief, apply the blister recommended for sore throat. After the blister has produced vesication, cover it with a linseed poultice.

The acute form sometimes terminates in the chronic, and then proves troublesome. Tumors or bony excrescences form on the bones of the different parts of the body, those of the pelvis and spinal column, around the joints causing them to become completely ankylosed. A number of cases have come under our observation where the bones of certain joints were thoroughly united, rendering the animal useless.

EPIZOOTIC CELLULITIS OR PINK EYE, as it is commonly called, is another form of influenza, and differs from the simple and uncomplicated form, in that it attacks the cellular tissue. The term pink eye has been given this affection from the general appearance of the conjunctiva (inner surface of the eyelids), which becomes congested and swollen, presenting a pinkish appearance, hence the term pink eye. An attack of epizootic cellulitis is usually less severe than even the ordinary form of influenza.

SYMPTOMS.—There are fever, rigors, dullness, swelling of the eyelids, discharge of tears, pain in the limbs, with more or less swelling of the joints. In consequence of the latter symptom it is sometimes mistaken for rheumatism, and the name rheumatic influenza has been given it.

There is restlessness, shifting of the feet, and irritability. Succeeding swellings may be superficial only, for the tissue

underneath the skin is all that becomes affected. The pulse is increased, hard and strong, temperature elevated to 103–105° F. There is constipation of the bowels, which after a time is succeeded by diarrhœa. This is a favorable sign, after which the symptoms diminish rapidly.

The disease runs a favorable course in from five to eight days, and does not produce the marked debility noticed in simple influenza.

TREATMENT.—The treatment is very simple. If the bowels are constipated give from three to five drachms of Barbadoes aloes, or one to one and one half pints of raw linseed oil. Allow moderate doses (teaspoonful) nitrate of potash twice per day in drinking water. The food should at first be limited and of a cooling nature, such as bran mash and a little hay. Good sanitary conditions should be provided in this disease as well as in others. The animal will usually be ready for work by from the tenth to the twelfth day.

On June 11, 1887, while practicing as a partner with Dr. Sutton at Kalamazoo, Michigan, we were called by Fuller & Son to examine a cream gelding six years old that they had purchased two days before, apparently in a perfect state of health at the time of purchase.

The symptoms presented by the animal at the time of our visit were those of a rather severe attack of influenza.

General appearance not much changed, loss of appetite, ears and legs cold, mouth hot, dry and sticky, pulse 70, full and strong, temperature 105° F.

These symptoms varied but slightly until June 20, when there was a marked change.

June 20.—Symptoms slightly increased in severity, pulse 70, respiration 20, temperature 105½° F.

June 21.—Animal appears dull, temperature 107° F., pulse 70, respiration about the same, action of the heart easily felt by placing hand on left side of chest.

June 23.—Temperature 106° F., pulse 68, general appearance of the animal slightly improved, appetite somewhat better.

During the next two weeks the symptoms were about the

same, with a slight variation of the temperature, which ranged from 105° F. to 106° F. The pulse also varied somewhat, from 60 to 70 beats per minute. Respiration a little more distressed. The animal gradually losing flesh and getting weaker from day to day.

July 7.—On making an examination this morning, found that the action of the heart could be distinctly felt on the right side of the chest, and seems to be as plainly felt on the left side.

When the horse was led out he swayed his body to the left, his head to the right; mucous membranes deathly pale; auscultation over the thoracic cavity revealed no abnormal sounds, but it was evident from the peculiarity of gait and the beating of the heart, that the difficulty was now of a cardiac nature. Temperature 105° F., pulse 70, respiration 25.

The symptoms from now on were about the same, with occasional gradual variation, but at no time did the temperature fall below 105 2-5° F.

The horse gradually failed until August 13, when there was a marked change in the pulse, it becoming accelerated, weak and almost imperceptible. The horse refused to move unless urged. The thoracic cavity was beginning to fill. He grew weaker rapidly, and died without a struggle on the morning of August 15, after an illness of fifty-eight days.

*Post-mortem.*—On opening the chest it was found filled with an amber-colored fluid of the consistency of water. Lungs normal in appearance, both as regards size and color; they were slightly displaced owing to the size of the heart. The pericardium was attached to the pleural walls on the left side of the chest and filled with a fluid similar to that contained in the thoracic cavity.

The inner surface of the pericardium was attached to the heart in a number of places by rough processes, some of which were finger-shaped and two to two and one-half inches in length. Other of these processes were shred-like.



FIG. 1.



FIG. 2.

The heart was much enlarged. Fig. 1 represents a side view and Fig. 2 an end view, showing a section through the common aorta. It was very rough externally, being covered with processes resembling those on the pericardium, to which it was attached in several places.

The apex of the heart rested on the right side of the sternum, to which it was firmly attached by abnormal growths. When removed and thoroughly washed and cleaned it weighed 16 1-2 pounds.

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## REPORTS OF CASES.

*“Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science.”*—VETERINARY RECORD.

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### ACTINOMYCOSIS IN CATTLE.

PEORIA, ILL., Dec. 8, 1889.

*To the State Board of Live Stock Commissioners of Illinois.*

GENTLEMEN.—In obedience to your orders, we have, personally, examined with care the following cattle, all of which in our opinion, are affected with actinomycosis, to wit: twelve bullocks in charge of the Northern Distilling Company; thirty-three bullocks in charge of the Great Western Distilling Company and thirty-nine bullocks in charge of the Monarch Distilling Company, all in the city of Peoria, county of Peoria and State of Illinois, all of which are described, among others in certain quarantine notices, dated August 27th and 28th, 1889, and issued by John Scott, V.S., Assistant State Veterinarian of Illinois.

Out of the entire number of quarantined animals, in the case of one bullock, to wit: number seven from either end of the row of diseased animals at the Northern Distilling Company's stables, we failed to find sufficient evidence of actinomycosis to warrant us in condemning the animal, and we would recommend its release.

During our inspection we made three autopsies of bullocks included in the number quarantined, but not included in the above enumeration, with the following results:

*Autopsy No. 1.*—A red bullock found dead at the Monarch distillery on the afternoon of the 5th inst. Autopsy conducted at once while the animal was still warm. The body was extremely emaciated, and showed numerous large tumors about the under side of neck and jaw, around pharynx and larynx. The lungs throughout their greater part were thickly studded with actinomycetic tumors, varying in size from a hazel nut to as small as could be seen with the eye, some semi-solid, others containing thick yellowish white ones. Some portions of the lungs were gangrenous and foul smelling.

*Autopsy No. 2.*—A red and white bullock in charge of the Great Western Distilling Company, aged four years, weighing about thirteen hundred pounds, in good condition of flesh, selected for autopsy by Mr. Joseph Greenhut; animal slaughtered to-day and autopsy made immediately afterwards. Beneath the jaws, loosely attached, somewhat to the right side, there was a tumor about the size of a man's double fists, which, upon section was found composed mainly of cicatricial tissue, radiating from centre outwards, and thickly studded throughout with small yellowish nodules as large as a mustard seed, doubtless composed of aggregations of actinomyces. A hardened cicatrix about the size of a hazel nut was found on the upper surface near the base of the tongue, which, on section, was found to contain yellow knots of actinomycosis. A similar tumor of about the same size and of same appearance on section, was found in the pharynx. A lymphatic gland taken from the region of the pharynx showed on section, groups of actinomyces. Small yellowish nodules of actinomyces, varying in size from a pin's head to that of a linseed were found numerously scattered in the mesentery, and in the muscular walls of the small bowels, and some similar tumors were found in the walls of the cœcum. The peri and endocardi were thickly studded with large and inflammatory patches.

*Autopsy No. 3.*—A white and red bullock in charge of the Monarch Distilling Company, selected for autopsy by ourselves; animal extremely emaciated and showing several hard tumors as large as a man's fist about the pharynx and larynx.



The lungs exhibited in numerous places considerable numbers of actinomycotic nodules, singly and in groups, varying in size from as small as could be seen, to the size of a hazel nut, the smaller ones being solid, and the larger ones filled with pus.

We believe actinomycosis to be a malignant disease, due to a fungus known as actinomyces. We believe it to be a dangerously contagious disease, transmissible from animal to animal, and from animal to man, and we consider the flesh of these animals unfit and dangerous for human food.

Respectfully submitted,

Signed :

JOHN CASEWELL, M.R.C.V.S.,  
*State Veterinarian.*

JOHN SCOTT, Peoria,

W. L. WILLIAMS, V.S.,

B. B. PAGE, V.S.,

*Assistant State Veterinarians.*

#### VENTRAL HERNIA.

By W. H. RIDGE, V.S., Trevoise, Bucks Co., Pa.

I have a case so near like the one Dr. Hess reports, that I give it in full from my notes made every day after seeing my case, ventral hernia.

September 9.—Was called to see a mule one and one-half years old; had been running at pasture with the cows, when bull gored him at 10 A.M.; owner saw him do it. At 10 P.M., came for me; found him with wound at posterior edge of floating ribs in lower third, left side, with about two feet of omentum hanging out, which was very much inflamed; washed off after casting, and replaced; put in deep pin sutures, using shawl pins, using tape (figure of 8—using three pins). Wound four inches long; put on pad of oakum saturated with tr. aloes comp. I made a note that night, which I think now it would have been better to have ligated and amputated the omentum.

September 24.—Serum weeping out of wound; eating all right; gave tr. aconite, gtt. x., t.i.d.

September 25.—A great deal of œdema around wound; eating all right; could not examine it much as it was not halter broken, and will kick with vim; continued aconite and fomentations when possible.

September 27.—Eating all right, but a great deal of œdema around wound and under belly; ordered hot bathing and gave pot. nit. in drinking water.

September 29.—Eating, bowels normal, a great deal of œdema under belly, but more diffuse than before; seemed more vicious. I took lower pin out of wound, which let out a quantity of bloody pus.

October 5.—Swelling nearly all gone; took out the remainder of pins, leaving the tape sticking to hair.

November 3.—Can scarcely see where the wound was.

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#### URINARY CALCULI IN A DOG.

By C. H. PEABODY, D.V.S.

The following case was quite an interesting one to me from its rarity. On October 15, 1889, at 1:30 A.M., I was called to see a pug dog, eight years old, that could not urinate. On arriving at the house I found a very fat pug trying to urinate with great pain.

Taking a small catheter, I passed it through the urethra, having some difficulty getting it through the groove in the oss of the penis. By patience, and a little force and injections of hot water, I succeeded in entering the bladder, and got about  $\zeta$ i of urine. The animal then, in its struggles, got away, and in doing so the catheter was drawn from the urethra. In a moment or so he made an attempt to urinate and passed about  $\zeta$ iv of urine, and with it twenty-one small, round calculi.

The next day the dog was brought to my office and with a small catheter and fountain syringe, I injected the bladder with warm water and then when he expelled the urine I got eight more calculi. Since that time he has been troubled several times, but the owner has got a catheter and now passes it himself. He informed me that he should think that there had been thirty or forty more small stones expelled.

On rectal examination I could feel the concretions in the bladder with the end of my middle finger, after evacuating the bladder. I advised the owner to have the dog operated upon, but he would not consent. The animal is at the present time doing well.

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#### COCAINE IN CARPAL TENOTOMY.

BY THE SAME.

I injected  $\frac{3}{4}$  i of cocaine under the skin, over the seat of the operation. Rubbed on the outside of the skin a few drops; brought the opposite leg forward, made the incision through the skin tissues and synovial sheath. Passed a blunt pointed tenaculum under the tendon, bringing it well out of the groove, and separated it, the animal not moving the leg at all during the operation.

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### EXTRACTS FROM FOREIGN JOURNALS.

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#### RUPTURE OF THE RECTUM IN THE HORSE, AS A COMPLICATION OF THE FORCED DECUBITAL POSITION.

BY MR. F. MAURI.

The author gives three observations of similar accidents. In the first, a stallion was thrown and secured for castration. While the clamp was applied on the left spermatic cord, he struggled violently, and his efforts were followed by a prolapsus of the rectum about one foot and a half in length. It was reduced immediately and while pressure was maintained over the anus the operation was finished on that side, and the right testicle then exposed. While the second clamp was applied, the animal struggled again still more violently, and the rectum was pushed back a second time, and with it a large portion of the small intestines, and about two yards of the floating colon. The operation of castration was closed, and the reduction of the intestines completed, but the result was not doubtful, the animal dying during the night. The post mortem revealed both a rectal laceration and one of the meso-colon.

In the second case, already reported by Mr. Trasbot, in 1888, the subject secured also for castration, had already been operated on one side, when at the enucleation of the second

testicle, under violent contractions, the rectum was pushed out to a length of about fifteen inches with a laceration on the superior border through which protruded a loop of small intestines. Death from peritonitis took place in three days.

In the third case the accident was somewhat similar, the rupture of the rectum being followed by death a few days later.—*Revue Veterinaire*.

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ENORMOUS CYST OF THE CHEEK IN A STEER—DEEP  
CAUTERIZATION—RECOVERY.

BY MR. CLAVERIE.

For over a year the animal had presented a large tumor on the left cheek. It was painful and hard, with a wide base, and had ulcerated some months previous with the discharge of a watery liquid. A large probe introduced through the fistulous opening, reached down through the cheek into the mouth, but was prevented by the mucous membrane from entering that cavity. Another fistula ran towards the eye. The tumor was an old cyst, whose surrounding membrane was thickened and indurated, and involved in its structure the zygomatico-labialis, the masseter, the alveolo-labialis, the lacrymalis, and part of the great superior maxillo-nasalis, and super maxillo-labialis muscles. The case was serious and required severe treatment. Five olivary cauteries, heated to white heat, were introduced into the cavity of the cyst, and deep cauterization of its membrane carried out as far as possible. The next day the animal seemed to be comfortable, salivated somewhat, and drank well. The cauterization soon gave rise to extensive sloughing, which left a rosy granulated surface. Subsequently the tumor began to diminish, abundant suppuration assisting its gradual shrinking, and three weeks afterwards the entire mass was removed and nothing remained but a whitish cicatrix, covered by a large spot of white hairs. The steer was then fattened and sold to the butcher for a good price. The severity of the treatment was justified by the serious nature of the lesions for which it was applied.—

*Ibid.*

## A CASE OF DUMB RABIES IN A COW.

By MR. BARBE.

A dog suspected of hydrophobia was killed after having bitten another dog and a young heifer. The heifer was bitten on the upper lid of the left eye, near the nasal angle. The wound measured about two inches in length, and was superficial, the epidermis only being scratched, and no hemorrhage following. A diagnosis of rabies was made at the autopsy of the dog, in consequence of the lesions found, viz., foreign bodies in the stomach, such as stones, pieces of wood and straw, and a highly congested condition of the mucous membrane of the stomach. The cow was isolated, and every thing seemed to continue in a normal condition for a period of twenty-seven days after the bite. The eye had not been cauterized, and the wound had healed readily.

On the twenty-seventh day she refused her food. Then, besides the anorexia, came loss of rumination, with profuse salivation, but no excitement. The general condition was good, and there was no change in the locomotion. She remained unconcerned in the presence of the other animals, dogs, fowls or cows which were about the place. Nothing abnormal appeared about the mouth, and the nose was cool and moist. No alteration occurred for two days, when her voice changed, becoming loud and irregular. This condition lasted until slaughtering. The principal manifestation was an impossibility to take food, but there was no pain connected with this; it was simply a regular paralysis. The post mortem revealed no specific lesion. If not a case of dumb rabies, what was it?—*Recueil de Med. Vet.*

## CEREBRAL TUMOR IN THE HORSE.

By MR. MOLLEREAU.

Common as this affection is in the horse, this case was one of unusual interest, on account of the seat of the tumor, and also of the nature of its structure. The animal was a grey stallion, about thirteen years old, which had been operated

upon and recovered for a deep punctured wound of the foot, two months before. He had resumed his work for about two weeks, when he was observed to be dull, carrying his head down, and showing some difficulty in masticating. A few days previously it had been observed that he walked with more difficulty than before.

When admitted for treatment, these symptoms had become more marked. His movements were difficult; his legs staggered; he stumbled, and if his head was raised, it caused him to stagger and fall. In getting up he first raised his hind quarters, resting on his knees in the manner of a cow, remaining in that position until assisted and his head firmly supported by assistants. Upon regaining his feet, his fore legs remained crossed until forced to move. The sight was good and seemed to be unimpaired. A melanotic growth was suspected and the destruction of the animal advised. The owner refused his consent until the symptoms had become so severe that every chance of improvement had vanished. At the post mortem no lesion could be found on the meninges, nor on the surface of the brain or in the ventricles. A section, however, made in the right cerebral lobe showed under the cerebral convolutions, at the point of mixture of the gray and white substances, an elongated, ovoid tumor of the shape and size of a small olive, which, under microscopical examination exhibited the organization of a sarcoma, containing numerous pigmentary black granulations.—*Ibid.*

#### RUPTURE OF THE THORACIC PORTION OF THE ŒSOPHAGUS.

By MR. F. DAGES.

The difficulty of diagnosing injuries of this nature during life, renders this case one of unusual interest, because, according to the author, the lesion might have been detected before death. A horse had been for three days with the following history: After a good meal of oats and hay, and having refused his ration of roots, he was sent to work, but being soon after taken ill with colic, was returned to his stable and treated by opiate drenches, but without producing relief.

When seen, he was dull; his head hanging in the manger and suffering from colicky pains; walking with difficulty; loins stiff; mouth thick and breath offensive; flanks tucked up; pulse small, quick, almost imperceptible; temperature  $39.5^{\circ}\text{C}$ .; respiration irregular and abdominal; percussion and pressure on the chest painful; auscultation normal below, but behind the shoulder, in the middle of the thoracic walls causing a peculiar noise, a kind of crepitant rale, like that of pneumonia. Suspecting pleurisy, the animal was put under treatment for that affection. On the following day he was taken with symptoms of choking, standing with both legs widely apart. Peculiar changes soon showed themselves in the chest; there was dullness in the lower third on both sides, which kept gradually increasing, and pleuritic sounds were easily detected. After three days of suffering the animal died from suffocation. At the post mortem, extensive lesions of pleurisy with effusion were discovered, but the lungs were healthy, together with the heart. Between the œsophagus and the cross of the posterior aorta, between the two layers of the mediastinum, there was a mass of food collected. There were two wounds on the tract of the œsophagus, one on the superior and one on the inferior plane of the organ. They were both rectilinear, from before backwards. The inferior, being also the smaller, extended through the mucous membrane only, while the superior, being much the larger, reached through both the mucous and muscular coats. The surrounding structures were more or less inflamed.—*Ibid.*

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#### SPONTANEOUS GIVING WAY OF THE LATERAL LIGAMENTS OF THE HIND FETLOCKS IN A HORSE.

By MR. L. MAGNIN.

An unusual lesion had occurred in a mare, aged eleven years, while getting up in her stall. She had been in good health, eating well and doing her work up to two hours previous, when she was found in her stall struggling to get up. When standing, both hind fetlocks were swollen and œdematous, the walk shortened, and the hind legs moving with hesita-

tion. She was lame in both legs, alternately on the right, then on the left. By manual exploration the phalanges could be moved and bent inward on the cannon bone; but displacement outward was impossible. A certain crepitation was detected, less marked, however, than in a case of fracture. The treatment consisted in the application of a severe blister, slings and plaster, splints not being on hand or easy to procure. For two days the diseased condition progressed and complicated itself ultimately by large cutaneous ulcers, and the giving way of the skin, with protrusion of the lower end of the metatarsus of the left leg first, but soon followed by the same complication on the right side, so that the animal stood on the ends of these bones with the digital region bent inwards. When destroyed, at the post mortem, the joints were found filled with coagulated blood, the synovial capsule torn and highly inflamed, the cartilages more or less ulcerated, and the lateral ligaments of both joints lacerated more or less in their entire thickness, or only in some of their fibres. What was the cause of this sudden breaking down? Was it due to peculiar alteration or pathological degeneration? These are questions that the author proposes to answer at a later period.  
—*Ibid.*

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## COMMENCEMENT EXERCISES,

### AMERICAN VETERINARY COLLEGE.

The fifteenth annual commencement exercises of the American Veterinary College were held on the 5th of March, at Chickering Hall. Prof. T. D. Weisse, M.D., President of the faculty, presided, and among the members of the faculty and of the Board of Trustees, were also found many friends of the college and members of the alumni association.

The exercises were opened by the Rev. Otto Arnold, who offered prayer, after which the members of the graduating class received their diplomas from the President, conferring the degree of Doctor of Veterinary Surgery. Following is the list of graduates; Charles Bruce Ainsworth, Greensburg, Ind.; Albert Fay Becker, Hemlock Lake, N. Y.; William Henry Berkmeier, New York; Henri Brister, New York



4 Joseph Dodge Burtis, Jamaica, N. Y.; Edward John Creely San Francisco, Cal.; Edward Francis Coyle, New York; Geo. Howard Davison, Ph. B., B. S. A., New York; Mayhar Wigton Drake, New York; Nathan Morroe Drake, New York; George Eighmy, North Chatham, N. Y.; John Ernst, Jr., Valley Falls, Kan.; William Elsworth Groff, Massillon, Ohio; John Hall, West Union, N. J.; Christian D. Hartman, Manheim, Pa.; Henry Edward Holden, Springfield, Mass.; Edward Franklin Koehler, Easton Pa.; Wesley Levi Labaw, Stoutsburg, N. J.; Frederick William Menhennitt, Champion, Mich.; Richard Middleton, A.B., Philadelphia; John Robert Mitchell, Princeton, Ind.; Martin Arthur Morris, Lowell, Mass.; Archer Edward Parry, Denver, Col.; Frederick William Peniston, Bermuda, W. I.; Edwin Ross Ogden, Newark, N. J.; Thomas Henry Ripley, Newark, N. J.; Herbert Sheldon Sackett, Brooklyn, N. Y.; Edward Lincoln Sander, New York; Samuel Wesley Schuppan, Jersey City, N. J.; Elmer Kautz Schaub, Lancaster, Pa.; Eckley Rayner Storrs, Mansfield Center, Conn.; Thomas Lawrence Swift, Falmouth, Mass.; Louis John Tissaint, Milwaukee, Wis.; George Vernon Towne, Thompson, Conn.; Seward Clarence Tremaine, Baddeck, Nova Scotia; Frederick William Turner, New York, and John Nicholas Wittpen, New Jersey.

The following prizes were then awarded by Prof. C. A. Doremus:

Gold medal for the highest proficiency, to Richard Middleton, A.B., Philadelphia.

Silver medal, presented by the Faculty for the best practical examination passed before a Committee of Veterinary Surgeons, to Edward John Creely, San Francisco, Cal.

A set of medical books, for the second best examination passed before the same committee, to Albert Fay Becker, Hemlock Lake, N. Y.

A case of dissecting instruments, presented by College Alumni Association, for the best written and defended paper read at the meetings of the Association during the term, to Joseph Dodge Burtis, of Jamaica, L. I.

A pocket case of instruments, presented by Prof. Liautard

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for the best preparation in surgical anatomy, to Edward Francis Coyle, New York.

One of the interesting features of the Commencement was the reading of a letter by the Acting Consul General of France, M. J. Dupas, which authorizes on behalf of the French Minister of Agriculture the admission into French veterinary schools of all graduates of the American Veterinary College, without examination. The diploma of the local institution is now recognized at Paris, and, unless their standing at yearly examinations prevents, New York boys can obtain diplomas there within a year.

The valedictory was delivered by W. E. Groff of the graduating class, and the Hon. J. R. Brady addressed the newly pledged doctors, pointing out to them the responsibilities and opportunities presented to them in their professional career.

The Rev. Otto Arnold then pronounced the benediction.

During the evening Cappa's Seventh Regiment orchestra furnished selections of music, which enlivened the proceedings.

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## BIBLIOGRAPHY.

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VETERINARY DENTAL SURGERY.—By I. D. Rhinebauch, M.S., V.S.

This is a small work which will no doubt receive at the hands of the profession a kind welcome, it being the first essay on this important branch of operative surgery. Divided into twenty-two short chapters, it treats of its subject, if not in a thorough and complete manner, at least in one as extensive and perfect as could be expected in a first attempt. The long and extended experience of the author as a veterinary dentist has furnished him ample material and numerous interesting cases, which he records, and which wisely connected with those already published by other authors, to which Dr. Rhinebauch gives full credit, render this little volume a valuable acquisition to a veterinary library.

PRECI'S DE MICROBIE MEDICALE ET VETERINAIRE.—(Treatise of Medical and Veterinary Microby).—By L. H. Thonion and E. J. Masselin.—(G. Masson, Paris).

This is one of the most practical and complete books for the study of bacteriology. The first part treats of the general technic, with a great luxury of details and plates. The second part relates to the study of the various diseases: 1st, those common to man and animals (bacteridian, anthrax, tuberculosis, glanders, septicemia, actinomycosis, suppuration); 2d, those special to animals (bacterius anthrax, chicken cholera, rouget, farcy); 3d, those special to man, (cholera, typhoid fever, leprosy, diphtheria, pneumonia). The book is strictly practical and scientific, and an excellent addition to the important branch of pathology to which it is devoted.

## SOCIETY MEETINGS.

### UNITED STATES VETERINARY MEDICAL ASSOCIATION.

#### SPECIAL NOTICE.

The annual meeting of the United States Veterinary Medical Association convening September 16, 1890, will be held in Chicago, Illinois. The committee of arrangements are Drs. Huidekoper, Wray and Hoskins.

W. HORACE HOSKINS, *Secretary*.

### ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The Illinois State Veterinary Medical Association held its regular semi-annual meeting at the National House, Peoria, Thursday, February 20, 1890.

The following members were present: J. A. Calder, C. E. Hollingsworth, James McClintock, J. T. Nattress, J. F. Pease, H. G. Pyle, J. D. Robinson, J. F. Reid, John Scott, R. W. Story, H. A. White, W. L. Williams, H. Thompson, S. H. Kingery and A. G. Alverson.

Order was called at 11 A.M., President Williams in the chair.

After the roll call and reading of the minutes, the following were proposed for membership and unanimously elected: J. D. Rutherford, Ontario, '87, Rock Island; S. V. Ramsey, Chicago, '89, Tuscola; W. A. Smith, Chicago, '89, Sparland.

The Treasurer's report was read and approved.

Dr. Kingery reported quite fully on a case of coal-oil poisoning. (See original articles in this number).

DISCUSSION.—Dr. Williams suggested that similar symptoms might have been produced from strangling in drenching. Dr. Nattress has seen ill effects from the too free application of the oil to the surface, to kill lice. Might not this be from interference with the functions of the skin?

Dr. Butler, President of the Iowa Association, was then introduced to the members, after which the meeting adjourned.

At 2 P.M., the members came to order to listen to an interesting paper on actinomycosis, by Dr. John Scott, of Peoria.

DISCUSSION.—Dr. Butler attacked the position of the author on the constitutional nature of the disease; the fungus is essentially an *invading* one; its spores are too large to be readily carried by the vascular system.

Dr. Pease quoted from Dr. Billings to prove the invading nature of the fungus.

Dr. Williams thought that all the tissues attacked could be easily invaded from epithelial surfaces.

Dr. Williams asked if there is any authenticated recovery from the disease.

Dr. Butler thinks he had a genuine recovery after extirpation of the thyroid gland.

The author read from the State report to prove that extensive internal lesions had been found where the external lesions were very slight.

As a whole, the society coincided with the author on the sanitary importance of destroying the carcasses of all animals, at all affected with the disease.

Dr. J. F. Reid, of Decatur, presented a well written paper on the use of anesthetics in veterinary practice. (See original articles in this number).

The discussion brought out the point that Squibb's chloroform is the best and cheapest, especially as an occasional fatality may occur, and the surgeon be exposed to censure.

Correspondence was received from the Secretary of the Indiana Association, thanking this Society for its invitation to attend this meeting.

Word was received from Dr. Tiffany explaining his failure on programme.

Dr. Tait Butler then addressed the society on the subject of the United States Veterinary Association. He presented correspondence from Dr. Michener announcing the bringing of the next meeting to Chicago in September. A discussion ensued on the duty of this society toward the National Society.

On motion by Dr. Story, seconded by Dr. Pease, a committee to consist of the President, Corresponding Secretary and one member to be appointed by the chair, was created to solicit new members in Illinois.

The chair appointed Prof. A. H. Baker.

The committee on arrangements reported that they had interviewed the editor of the REVIEW on the subject of printing the papers and reports of our meetings. He offers to print all the papers and furnish one hundred reprints at a nominal expense.

The committee advised that the offer be accepted.

On motion by Dr. Scott, the matter was referred to the President with power to act.

Votes of thanks were tendered to Dr. Butler for his attendance, and to the essayists.

An amendment to Article I of the By-Laws was proposed in writing, signed by Drs. S. H. Kingery and H. G. Pyle, and was read by the Secretary and laid over till the November meeting.

The Association then adjourned until the annual meeting.

J. F. PEASE, Quincy, Ill.,  
*Recording Secretary.*

## NEW YORK STATE VETERINARY MEDICAL SOCIETY.

At a meeting of a number of veterinary surgeons in Rochester, New York, at Assembly Hall, on January 15, 1890, the following order of business was carried out :

The meeting was called to order by Dr. Harry Sutterby, of Batavia, New York, and Dr. Claude D. Morris, of Bath, New York, was elected temporary chairman.

The roll was called and the following veterinary surgeons answered to their respective names :

Dr. E. E. Bowens, Seneca Falls ; Dr. John A. Bell, Watertown ; Dr. Jas. Carnite, Amsterdam ; Dr. W. G. Dodds, Canandaigua ; Dr. Drinkwater, Rochester ; Dr. O. B. French, Honeyoe Falls ; Dr. B. Howes, Brockport ; Dr. A. L. Hunter, Watkins ; Dr. J. G. Hill, Auburn ; Dr. W. G. Hollingworth, Utica ; Dr. Wilson Huff, Rome ; Dr. Nelson P. Hinkley, Buffalo ; Dr. H. C. Klicker, Canidea ; Dr. D. Leary, Kendall ; Dr. Asia M. McQueen, Hornellsville ; Dr. Claude D. Morris, Bath ; Dr. M. M. Poucher, Oswego ; Dr. H. E. Rowell, Albion ; G. H. Roberts, Akron ; Dr. W. S. Stevenson, Tyie ; Dr. Harry Sutterby, Batavia ; Dr. Joseph Sutterby, Leroy ; Dr. Frank Sutterby, Lyons ; Dr. D. K. Seltzer, Pen Yan ; Dr. John Wende, Buffalo ; Dr. Wytock, Warsaw ; Dr. Whyte, Rochester.

On motion of Dr. Nelson P. Hinkley, which was seconded by Dr. Harry Sutterby of Batavia, all persons in the room who were not graduates of any recognized colleges, and who had not the proper degree of Veterinary Surgeon conferred upon them by authorized colleges, were requested to withdraw. The motion was unanimously carried, and several gentlemen left the room.

After a lively discussion by several gentlemen in the room, a motion was made by Dr. Harry Sutterby, of Batavia, and seconded by Dr. H. E. Rowell, of Albion, that that part of Section 4, in Chapter 1 of the By-Laws of the society, which provides that the officers of the society shall be elected by ballot, be dispensed with for the occasion, and that the said officers be elected by acclamation. Carried.

On motion of Dr. H. E. Rowell, of Albion, seconded by Dr. John Wende, of Buffalo, Dr. Claude D. Morris, of Bath, was unanimously elected President for the ensuing year.

On motion of Dr. A. L. Hunter, of Watkins, seconded by Dr. W. G. Hollingworth, of Utica, Dr. Drinkwater, of Rochester, was elected Vice-President

On motion of Dr. James W. Bell, seconded by Dr. Sutterby, Dr. N. P. Hinkley was elected Secretary.

On motion of Dr. D. K. Seltzer, seconded by Dr. Wilson Huff, Dr. W. G. Dodds was elected Treasurer, and ordered to give bonds in \$200,00.

Dr. H. E. Rowell then suggested that the name of the association be known as the Empire State Veterinary Medical Association. After an animated discussion, which was taken part in by several gentlemen from the several different parts of the State, a motion was made by Dr. A. L. Hunter, and seconded by Dr. W. G. Hollingworth, that we be known as the New York State Veterinary Medical Society, which was unanimously carried.

The question of the number of times that the society should meet was next taken up. Dr. John Wende, of Buffalo, suggested once a year, and after a long discussion it was decided by unanimous vote that for the present the society would meet semi-annually.

The By-Laws which had been carefully prepared by President Morris, were then read, and it was moved by Dr. W. G. Hollingworth, and seconded by Dr. A. L. Hunter, to accept the By-Laws, to have them properly printed in book form and a copy sent to each member. Carried.

The President then presented the following names to act as Censors for the ensuing year: Drs. John Wende, Harry Sutterby, John Wytock, A. L. Hunter, J. A. Bell, and the above gentlemen were instructed to agree upon one of their number to act as Chairman or Speaker of the Board of Censors.

A motion was then made by Dr. E. Bowens, seconded by Dr. A. L. Hunter, that the five gentlemen's names presented by the President be elected as Censors for the ensuing year, which was unanimously carried.

A motion was made by Dr. John Wende, seconded by Dr. W. G. Dodds, that the Committee of Arrangements consist of the following gentlemen: Drs. Asia M. McQueen, M. M. Poucher and N. P. Hinkley.

A motion was made by Dr. John Wende that the Board of Publication shall consist of Drs. N. P. Hinkley, W. G. Dodds, H. E. Rowell, W. Huff and Stevenson. This was also unanimously carried.

The President then nominated the following gentlemen as a Committee on Legislation: Drs. Claude D. Morris, N. P. Hinkley and W. G. Hollingworth.

Dr. J. G. Hill then made a motion, which was seconded by Dr. D. K. Seltzer, that the gentlemen named be elected for the ensuing year. Carried.

For the Committee on By-Laws, the President appointed the following: Drs. N. P. Hinkley, O. B. French, and Whyte.

A motion was then made by Dr. Drinkwater, seconded by Dr. Whytock, that the gentlemen be elected, which was unanimously carried.

Dr. Drinkwater then moved that Drs. G. H. Roberts, Jos. Sutterby, J. G. Hill, Frank Sutterby and James Carnite compose the Committee on Constitution; this was seconded by Dr. W. G. Dodds, and was unanimously carried.

The President then read an act of the statutes of 1886, to regulate the practice of Veterinary Medicine and Surgery in the State of New York, and after going over the ground carefully as to further needs of legislation in regard to this matter, the President then made the astonishing report that in the State of New York there were seven hundred and fifty (750) unqualified men registered in the County Clerk's Office, to the astonishingly small number of two hundred and fifty (250) qualified men. That in some counties of the said State as many as forty-two (42) were registered, and only two of them were qualified, while some of the unqualified were unable to sign their names, and had to make the usual (X) cross prescribed by law. He also stated that one of the County Clerks personally informed him, that himself (the President) and Dr. Asia M. McQueen were the only two gentlemen that came in a gentlemanly and sober condition to register, some of the rest of them being in a beastly state of intoxication.

It was then recommended by the President that the Society be incorporated and petition the Legislature to have a charter. Carried.

It was then moved by Dr. M. M. Poucher, seconded by Dr. John Wende, make the city of Syracuse the next and permanent place of meeting for the Society. This was unanimously carried.

A motion was then made by Dr. A. L. Hunter, seconded by Dr. D. K. Seltzer, that an application be made to the Legislature for a charter this coming winter, which was unanimously carried.

It was then moved by Dr. B. Howes, seconded by Dr. O. B. French, that the sum of five dollars (\$5.00) be charged to each and every member as an initiation fee to the Society.

A motion was then made by Dr. Sutterby, seconded by Dr. A. L. Hunter, that a vote of thanks to the Secretary and Treasurer for the generous offer of their services for the ensuing year, free, be adopted, which was passed unanimously.

A lively discussion then took place in regard to the annual dues of the Society, which resulted in a motion made by Dr. Sutterby, seconded by Dr. D. K. Seltzer, that the annual dues be two dollars (\$2.00), subject to an assessment if so required.

A motion was then made by Dr. Sutterby, seconded by Dr. John Wende, to purchase a steel seal with the name of the Society, and stamps for the same, and that the same be entrusted to the Secretary, which was unanimously carried.

A motion was then made by Dr. Sutterby, seconded by Dr. D. K. Seltzer, that the matter of printing the certificates of membership be entrusted to the five Censors, the Secretary and the President. This was unanimously carried.

Dr. Sutterby then took the floor and requested that all members remain and attend the banquet to be given in the evening.

A motion was then made and seconded that all the Committees be empowered, after receiving the signature of the Secretary, to draw upon the Treasurer for the amounts used and expended by them for the use of the Society.

Motion was then made by Dr. John A. Bell, seconded by Dr. Drinkwater, to adjourn until 7:30 P. M. Carried.

#### EVENING SESSION.

The meeting was called to order at 7:30 P. M. with the President in the Chair.

A motion was then made by Dr. Sutterby, seconded by Dr. A. L. Hunter, that the President appoint a committee of three to investigate the character and professional standing of Dr. M. W. Carrier. This was carried, and the Chair appointed Dr. Sutterby, Dr. Asia M. McQueen and Dr. D. Leary, who withdrew to the hall with Dr. Carrier to investigate.

It was then suggested that in the fourth clause of Chapter II of the by-laws, to add the words "rectitude and moral qualification in all respects." Carried.

It was then moved by Dr. A. L. Hunter, seconded by Dr. John Wende, that as the President had been to quite an expense in collecting matters and spending time for the good of the Society, in getting statistics from the different County Clerks to get the Society properly started, "Be it resolved that the said Claude D. Morris make out a bill of all his expenses that he has

incurred for the good of the Society, and draw on the Treasurer for the same." The President then called the Vice-President, Dr. Drinkwater, to the chair. The motion was put before the House and unanimously carried.

Dr. Sutterby then said that the Committee was ready to report with regard to the professional standing of Dr. M. W. Carrier. That the said Committee found that the professional standing of Dr. M. W. Carrier was not of such a character as to warrant him to become a member of the Society, and that his name be removed from the roll, and that the dollar (\$1.00) he paid toward the banquet be refunded to him. The President ordered the Treasurer to refund the money, and the Secretary to erase his name from the roll.

Dr. W. G. Hollingworth then presented an act founded by the Long Island Veterinary Society, of New York, to provide for the organization of a veterinary corps and for the rank and compensation of the Veterinarians of the United States Army. The act was read by the President, who commented on the advisability of having such an act, and it was moved by Dr. Sutterby, seconded by Dr. W. G. Hollingworth, that this act be placed in the files of the Society by the Secretary, and receive the hearty co-operation of every member of the Society.

A resolution on tuberculosis presented at the twenty-sixth meeting of the United States Veterinary Medical Association, by Dr. L. McLean of Brooklyn, N. Y., that the disease known as tuberculosis in cattle be placed under the same category as contagious pleuro-pneumonia, and to be similarly dealt with, was read by the President, and a motion was made by Dr. W. G. Hollingworth, seconded by Dr. G. H. Roberts, that the action of the United States Veterinary Medical Association meet with a hearty co-operation of the Society.

A motion was then made by Dr. Sutterby, seconded by Dr. Asia M. McQueen, to offer a vote of thanks to the President and Secretary for the able manner in which they had conducted the meeting.

Then by unanimous vote the Society adjourned until the second week in July, 1890, subject to a call from the Secretary.

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### LONG ISLAND VETERINARY SOCIETY.

A regular meeting of the Long Island Veterinary Society was held on the above date at No. 74 Adams Street, the President, Dr. George H. Berns, in the chair.

The following members were found present on roll call: Drs. Berns, R. R. Bell, McLean, Bowers, E. Hanshaw, Jr., Atchison, Housman, Breslin, Mustoe.

The minutes of the previous meeting were read and approved.

The Board of Censors made no report.

The next order of business being the reading and discussion of papers, and as the discussion of the paper read at the previous meeting by Dr. R. A. McLean, was postponed until this meeting, the subject was re-opened by Dr. McLean again reading his paper on "Influenza," after which an animated and instructive discussion took place by all the members present.

Dr. R. R. Bell reported to the Society a request from the Dean of the Fac-



ulty of the American Veterinary College, that this Society should select one of its members to act as one of a Board of Examiners of three, to examine the applicants for the practical prize of the College.

The request was received and accepted, and Dr. George F. Bowers was unanimously chosen to be the representative of the Society.

Dr. R. A. McLean proposed the name of Dr. J. McKee, No. 14 and 16 Nevins Street, for membership in the Society.

The meeting then adjourned.

D. S. BRESLIN, D.V.S., *Sec'y*

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### ALUMNI ASSOCIATION OF THE AMERICAN VETERINARY COLLEGE.

The *Alumni Association of the American Veterinary College* held their annual meeting in the hall of the college at 11 A.M., March 5th, 1890. The President, Dr. W. Horace Hoskins, called the meeting to order, and on roll call about twenty-five members responded, with a number of the graduating class of the present year.

The report of the Executive Committee for the year then followed, and notice was given that they had prepared the usual alumni prize, completed arrangements for the annual dinner, issued copies of the Constitution, By-Laws and Code of Ethics to each member and such other business as was allotted to him.

The Secretary, Dr. A. T. Sellers, reported the continued prosperity of the members, and announced many new positions accorded members of the Alumni Association, as teachers in other colleges, as members of the Bureau of Animal Industry, as State Veterinarians, on city boards of health and every active work throughout the whole country in the various State and local Associations.

The report of the Alumni Trustees through Dr. J. W. Coates, then followed, showing the rapid advancement of the college, the increased number of students, the adoption of the three years' course by a large number of the students and the general success and prosperity of the college. He referred to the special act of the New York Legislature in granting the college an act of reincorporation, and approving of the entire work of the school done since its opening in 1875. In grateful terms he referred to the Board of Trustees and their zealous, painstaking work on behalf of the college, and much other matter of importance to the members.

The President then made his annual address, giving urgent solicitation to the Alumni Association to now shoulder the responsibilities that belong to them. Passing hurriedly over the number of graduates which, with the class of 1890, would reach 348, of whom all are living save eleven, and whom prosperity and success had attended, he passed on to the grouping of them in States, urging the wisdom of establishing State Alumni Associations wherever strong enough in individual States, and interstate Associations where three or more existed in several adjoining States. Such work he believed would greatly aid their college parent and would bring within its walls many of the best men from such States as would take this action. In this way he believed the Alumni Association could act strongly and earnestly in all matters pertaining to the welfare of their alma

matter, and give it united support in all its plans and undertakings. Urging the duty upon the graduates of accepting their true responsibility in considering some plan looking toward the rearing of a future home for their college parent, he offered for consideration some three plans by which this movement might be made successful. First, through the action of the alumni in granting their college a fixed proportion of their earnings for one, two or five years, on a sliding scale; by action of State Associations rearing a fund for the purpose, and again by the creation of a sinking fund to which all could contribute something each year, this to be invested by the Alumni Trustees, and when of sufficient amount to be placed at the disposal of the Board of Trustees.

The report was afterward discussed by many of those present, and the matter was left for State organizations to determine the best plan of action, and to report to the Executive Committee, the latter with power to act.

The Association endorsed the army bill of the United States Veterinary Medical Association, and the officers were directed to forward a copy of their approval to the Speaker of the House of Representatives, and to the President of the Senate.

The annual election for the ensuing year resulted in the choice of W. Horach Hoskins, class of '87, for President; Theo. Birdsall, class of '85, Vice-President; A. T. Sellers, class of '87, Secretary; Andrew Strange, class of '86, Treasurer; G. A. Lathrop, class of '88, Librarian.

After some business of minor importance, the meeting adjourned to reconvene at 10 P. M. at "Clarks," West 22d Street, where one of the most sumptuous repasts was served, and around whose board some fifty of the Trustees, Faculty and Alumni gathered, to recall the happy college days and to rejoice in the recounting of victories already achieved, and to anticipate and plan for those of the future. Among the toasts happily responded to were those of "the Board of Trustees" by Dr. F. D. Weisse; "Veterinary Profession" by Prof. A. Liautard; "Our Sister Profession" by Prof. Doremus; "Alumni Association" by Dr. W. Horace Hoskins, and many bright and cheery remarks from members of the various classes seated around the festive board, thus fitly closing the happy, eventful and auspicious work of another college year. N. N. S.

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## CORRESPONDENCE.

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### SWELLED HEADS IN THE PROFESSION.

*Editor American Veterinary Review:*

DEAR SIR:—I like to see young men in the profession take interest in cases and report them, but when they have not yet obtained their sheepskin, to write an article about quacks and horse doctors it is a clear case of swelled head which I think a few years of practice will cure. I dare say that the same quacks could doubly discount the writer of the article either in practice, surgery or pathology.

In the article which I have in mind the animal treated had a new vein, the jugularis. I will cite a paragraph: "first I bled from the jugularis." Now I fail to find a vein of that name either in Chaveau, Gray, Weiss, Percival, Jeancon, Webster, Dunglison or Hobbin. Dunglison, in speaking of jugularis, says it is the throat, or at least calls it the throat because the yonk is attached there.

Now I would like to inquire what part of the throat the animal was bled from. If the animal was bled from the jugular why not say so, and not mystify us poor quacks and horse doctors?

In this same article potassium salts were used. As there are over twenty kinds of potassium salts would it not be a little more to the point to know which particular salt was given? Perhaps as it required digitalis and stimulants for a weak heart, after the removal of eight quarts of the life-giving fluid, the whole list of potassium salts might have been given.

Again, in the *Journal of Comparative Medicine and Veterinary Archives*, for January, is an article on removal of tumors: page twenty-nine. The operation, I have no doubt, was a most beautiful one and was done with the greatest skill, but when it comes to dissecting the penis out of the arch of the ischium to its free portion with its sheath by three rapid cuts, it was at least bold, if not very poor surgery. It looks as though it would have been better surgery to have made six slow cuts and saved what skin there could have been saved, and it might have taken only seven weeks to have healed it up instead of two months. We are also informed that the hemorrhage was trifling. Undoubtedly the horses of the Hub are anatomically constituted to accommodate the instructors of anatomy in that section of the country. It seems, however, that Chaveau, Percival, McBride and others have slight ideas that it is quite vascular in that region, but it is not supposed that a village practitioner should find the same anatomical construction that they do in the Hub.

In the same journal, page sixty-one, is another swelled head. In the letter addressed to Huidekoper in regard to his resignation as Veterinary Professor, the writer showed his want of

knowledge on the subject of veterinary medicine in America, when he says: "It is chiefly due to your enlightened views and self-sacrificing energy that THIS school of veterinary medicine is already recognized as THE BEST in any English-speaking country." Also in another paragraph he says: "The services rendered by you in placing veterinary medicine upon a scientific basis, for the *first time in America*, will ever be held in honorable and grateful remembrance."

With all respect to Professor Huidekoper, when one takes into consideration that in other English speaking countries there have been schools for a hundred years or more, and in this wild and uncultivated western continent there have been veterinary schools and colleges for twenty-five years or more, and the teachers of these schools, both in the United States and Canada, are men of an equal amount of learning, experience and practical knowledge and of years of teaching, it seems as though they ought to be able to put a school on as scientific a basis as a man with two years of study, no matter how big his head was, before he commenced.

There is hardly a month but what some one reports a case that is very wonderful in some one of the journals that are sent out. Now let all cases be reported in a clear manner so that one can, in a measure, understand it, and omit the words quack and horse-doctor, etc., for there are many of the quacks that can discount the graduates. As a military veterinarian says, in an article in the *American Veterinary Review*: "Let the so-called graduates pass a thorough practical examination with one of the so-called quacks, and they could not get one mark in a hundred." And while we hope any kind of a bill that would tend to elevate the profession, either in the army or out of it, will be encouraged, it is to be hoped, if the army veterinary bill does pass, that there will be a Surgeon-General appointed, who is qualified for the position by his work in years past, and not because he has got a political pull or is Chairman of some Committee of the United States Veterinary Association.

"A QUACK."

# AMERICAN VETERINARY REVIEW,

MAY, 1890.

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## EDITORIAL.

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DOCKING HORSES' TAILS.—Merely a freak of fashion—philanthropy and humanity opposed to it—their objection—another reason against it—empirical and unscientific mode of performing it—its justification when performed *secundum artem*—Massachusetts Society for the Prevention of Cruelty to Animals—New York City Courts—no regular graduate will now perform it. DR. PAUL PAQUIN AND DR. PAUL GIBIER.—One establishes the first laboratory for veterinary vaccine matter—the other establishes the first institute for the treatment of prophylaxy of rabies—the advantages that these institutions offer—the first bulletin from the Pasteur Institute of New York.

DOCKING HORSES' TAILS.—Of all the so-called “surgical” operations to which a capricious fashion has given origin, there is probably none which has encountered on the part of philanthropists and humanitarians such general and merited animadversion as the amputation or docking of the tail of the horse, and there certainly is none which more fully justifies the objections of right-thinking persons.

The objections principally and most zealously urged from this quarter have been founded on reasons both of humanity and esthetics, the former bearing specially upon the unnecessary mutilation of the animal, and the sufferings to which the victim is subjected, both during and subsequent to the operation, while the wound resulting from it is in course of healing, and to which must be added the annoyance and irritation which must follow the loss of so important a means of defence against the attacks of the swarming insects which in their season irritate and disturb him, by foraging on his sensitive skin. But there is also another reason, which from a profes-

sional standpoint possesses an equal degree of importance in the cruel and butcherly manner in which the docking is in the majority of cases performed, or we might say perpetrated. That any one possessing ordinary human feelings should allow the tail of a handsome animal to be cut off with a hatchet, in entire contempt of surgical rules and indifferent as to where the cut (or "hack") is made, and without considering the risk of leaving a projecting portion of a vertebræ protruding in the centre of the wound thus made, and left to itself to slough off after having been more or less exposed to injuries from external violence—this seems to be almost incomprehensible. Waiving the first objection for the moment, and merely considering the second from a surgical standpoint, it seems difficult to understand why, to-day, the amputation of the tail, when necessary, (for there are, at times, urgent indications for its performance) should not be performed *secundum artem*, by a careful and experienced hand, with all the benefits to be obtained from the use of local anasthæsia and by a proper operation at the point of the vertebræ, with ligation of the caudal arteries. This, with the simple dressing of the wound would place the case under conditions which would certainly obviate some of the most important of the objections now urged against the operation itself.

We are glad to learn that already in Massachusetts some offenders in this matter have received justice at the hands of the Society for the Prevention of Cruelty to Animals, and have had severe punishment meted to them for having docked the tails of a number of horses. The same thing has also recently taken place in New York city, and a decision rendered by the courts by which the operation of docking has become illegal.

We are pleased to remark, however, that amongst the persons who have subjected themselves to punishment in those last cases, we have failed to find the name of a single regular veterinarian, and we doubt if, to-day, any regular graduate in the State would perform the operation, except as we believe it ought to be done, under pathological conditions and for remedial reasons, and with the various steps above specified.

DR. PAUL PAQUIN—DR. PAUL GIBIER.—We some time since called the attention of our readers to the enterprise undertaken by Dr. Paul Paquin in the establishment of his Missouri Vaccine Laboratory for the preparation of prophylactic cultures and principally for that of the culture against anthrax, and we complimented the Doctor by assuring him of our best wishes for the success of his undertaking. While we have not received positive statistics of the results thus far accomplished by the Paquin "Vaccine" Laboratory, we are justified by private correspondence in saying that the institution is doing good work, and that very satisfactory results have already been secured. It would no doubt be of advantage to all the parties interested if a system of reports were inaugurated by which the profession might be benefited and enlightened by a knowledge of the success which has followed the use of the vaccine. The study of such reports would be of special interest to veterinarians in their practice, and would, no doubt, tend more than any other cause to induce them to test the value of the products of the laboratory.

Another student of Pasteur and one who is also familiar with his mode of preparing cultures, Dr. Paul Gibier, has recently come to our shores, and has opened a second Pasteur Institute in New York for the treatment of persons who have received injuries by the bites of rabid animals. A report of the opening of this new laboratory will be found on another page of the present issue, and our knowledge of the ability and experience of Director Gibier warrants expression of our confidence, that there can be no doubt as to the success of his undertaking. Europe may thus far have enjoyed the first benefits of the organization of these useful establishments, but thanks to the enterprise of these two gentlemen, we may now congratulate ourselves upon the fact that we are no longer obliged to look to Paris for the protection of our ruminants from a disease which has cost our breeders and cattle men so immensely, nor to cross the ocean to secure means for the rescue of friends, children and kindred from the prospect of a fearful death by the most horrid of diseases.

The first bulletin of the Pasteur Institute reads as follows :

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NEW YORK PASTEUR INSTITUTE, 178 WEST 10TH STREET, Y. Y. CITY.

Dr. Paul Gibier, Director of the N. Y. Pasteur Institute, begs to inform you of the results of the preventive inoculations against hydrophobia, performed at this Institute during the month of March, 1890. The Institute was opened on the 18th of February last.

From the 20th of February to 31st of March about thirty persons came to be treated; only nine were detained: the animals who bit the others being still alive, no farther infection was therefore to be feared.

Nine persons have received the Pasteur treatment and are at present in good health.

In these cases hydrophobia was experimentally shown to exist, (inoculation of the nervous substance of the dogs to other animals, who died with the ordinary symptoms of hydrophobia) and also by this fact that in one case, a horse and in another case, a hog, bitten by the same dogs, have since died from hydrophobia.

In six other cases rabies was very probable but the dogs disappeared and their bodies were thrown away without being sent to the Institute.

The patients were 4 from New York City; 3 Long Island; 1 Maryland; 1 Arkansas, of whom five were treated gratuitously.

Moreover, in order to be protected against the fatal danger of an accidental infection during the work, Dr. Paul Gibier has inoculated himself and three of his assistants.

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## ORIGINAL ARTICLES.

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### EXAMINATION OF HORSES FOR SOUNDNESS.

BY ROSCOE BELL, D.V.S.

A paper read before the Long Island Veterinary Society, April Meeting.

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I know of no branch of veterinary science in which there is more clashing of professional opinion, nor one upon which careful study and observation will yield more satisfactory results, than that very profitable department of our peculiar calling, known as "Examinations for Soundness." I am very sorry for you, gentlemen, that some of the more capable members should not have undertaken to lead the discussion upon this subject, for I can only give you a rough outline of the views of some of the many writers who have had occasion to discuss it, interspersed with only a limited amount of original thought gained in the course of a short practice. I say I shall lead the discussion, for that is about all that is to



be gained from the reading of this paper, and if by some remark I can excite some of the older heads to unbosom to us younger members some of the knowledge which long experience and acute perception have bestowed upon them, I will have accomplished all that I could have hoped for, when I assumed the responsibility of undertaking so vast and so important a subject.

Each year I have become more and more convinced of the value of this branch of our profession to the community, and judging by the increased demand for such services, I am led to believe that the public are imbued with the same estimate of it. Very few gentlemen in the large cities will now purchase a valuable animal upon his own judgment or upon the representations of his dealer. They want to know from a veterinary surgeon, not only if a horse is sound, but they seek his opinion upon the conformation, disposition, and general traits of the beast. I do not wish to be understood as saying that these latter points have anything in common with our duties; but I know that our clients invariably wish our judgment upon these matters; they lean upon us for guidance in their equine purchases, and often force us to an estimate of the horse's monetary value—a thing which we should avoid wherever it is possible this side of actually offending our client. If the animal cannot pass a clean examination, they often make the issue definite by asking in so many words: "Will he do my work?" They want to know if the horse is serviceably sound. I am sorry that this is so, for I am of those who do not believe that it is an easy matter to say of this horse, "he is sound;" of that horse; "he is unsound." This could be done if we had certain laws laid down for our guidance; certain things always constituting unsoundness; other defects to be classed simply as blemishes. We all know that a certain defect in one animal may render him unfit to perform work, while the same apparent trouble in another may be no worse than an eyesore. It requires a fine discretion, an acute judgment, and long observation to do justice to the animal, and to the buyer. Nothing makes more enemies for the faithful practitioner, than examinations for soundness. A dissatisfied

dealer can often prove to an intending purchaser that this veterinarian's opinion is valueless by procuring a certificate from an equally reliable source, having a contrary verdict upon the animal's bodily condition. And each certificate may be honestly given, based upon conscientious belief. This comes from the fact that different men view the animal from different standpoints, and estimate differently upon certain conformations and conditions. A writer in the March number of the *Veterinary Journal* exemplifies this assertion by pointing out that a man who has more particularly devoted himself to the study of physiology would be more inclined to first familiarize himself with the state of the animal's health. He would inquire into the condition of the circulatory apparatus by noting its effects upon the visible mucous membranes; observing the character and speed of its movements as denoted by the pulse; he will auscultate the respiratory murmur, and note any physiological or structural abnormalities there to be met. He will look into the functional activity of the principal glands of the system; carefully take note of the character of the intestinal secretory glands, by watching the condition of the fæces; of the sudoriferous and sebaceous glands, by observing the effects of exercise for the former, and examining the condition of the coat for the latter. He obtains an idea of the quantity and quality of the renal excretion to speak for the condition of the kidneys. He will not omit to make a thorough examination of the organs of special sense, not only viewing the eye from every angle, but will bring his ophthalmoscope into requisition, to determine if there is complete transparency of the crystalline lens; if the vitrous humor is devoid of foreign floating bodies; if the retina is luminous and normal, and if there is turgescence of the choridal vessels. But, on the other hand, we find a man equally as conscientious, though more practical, who deems these details, if not absolutely non-essential, of very minor importance. He is spending his time in a much more practical way. He moves about the animal with a studied grace, and touches with a systematic and theatrical show and grave composure, his educated hand, making a few quick strokes of the neck, down the

front legs, over the fetlocks ; slipping back to the rear, he dexterously manipulates the hips and the hocks. He brings down the admiration of his audience of the usual stable contingent, by a single glance at the incisor teeth, a fillip of the fingers in front of the eye to test the visionary powers of the wondering beast, and with a dig in the side he is prepared to pronounce the animal not a "roarer." With a trot up and down the street he is then ready to give his opinion to the owner as to the soundness of the animal. So these two men may observe the same defect, but it will have a different significance to each in many cases.

Again, personal experience with certain structural affections will influence an individual estimate of their significance. Those who have never met a case of sidebone, producing lameness, would be disposed to undervalue its importance, while a practitioner, observing hygroma of the hock only as a blemish, would not feel justified in sending its possessor back to his master ; or he who has only found splents cool and located on the rudimentary metacarpel bone, would hesitate in dealing harshly with one situated a little anteriorly. But conversely, an examiner who is fresh from a poor result in treating such an affection as any of the foregoing, would pronounce severe judgment on such abnormalities. So there are very many reasons why two practitioners examining the same animal may differ in their estimate of the horse's worth.

We will not speak to-night of that veterinarian who becomes so expert with his "practiced eye," and "educated touch" that a careful examination is not necessary for a thorough knowledge of the horse's condition. The time has passed when a hurried glance over the stall door will reveal to the intuitive mind of the "born veterinarian" a perfect insight into the anatomical structure and physiological functions of the salable soliped. We have no patience with a man who can see in his "mind's eye" this same horse ten years hence, performing his work to the perfect satisfaction of his trusting client.

But, to the careful, painstaking, intelligent veterinary surgeon, who goes about his task in a systematic, professional

manner, allowing no point to escape him, testing every function, and using every precaution to avoid overlooking any defect, carefully weighing everything which has a bearing upon a correct and conscientious opinion upon the condition of the animal he is called upon to examine, we desire to address ourselves, and try to assist him by an interchange of views here in this society hall.

Our time is too limited to discuss the many definitions of "soundness" which are as various as the writers upon the subject are numerous. I am not willing to deny that the definition given us many years ago by Mr. Percival is not as good as any that have preceded or succeeded his contribution to veterinary jurisprudence,—so far as it goes. He says,—“Any horse which is lame, or has that about him which is likely to render him lame, is unsound.” But surely, a horse may be absolutely unsound, and yet free from lameness. I should not employ the second time a doctor who allowed me to purchase an animal affected with pulmonary emphysema, simply because he was not lame.

Prof. Liautard makes a decided improvement upon this qualifying definition when he says: “An animal to be sound must be as near perfection as possible; must be free from disease likely to render him useless. We may find remains of disease, and yet he may be perfect enough to be a useful animal.” I do not like that portion of his definition which says “likely to render him useless.” He need not be useless to be unsound. He may be able to be useful, and yet his usefulness may be of an unsatisfactory character; and if he find “remains of disease and yet a useful animal” he is not necessarily a sound one. Possibly we may be able to arrive at a definition later on which will be the legal standard the world over.

To examine an animal thoroughly we should see him at rest and in action; we should see him hot and see him cold. When at rest in the stall, we are permitted to watch how he deports himself; what he does, and how he does it; and especially should we note his first movements when being backed out into the gangway, for I need not tell you the

significance of the symptoms which may here be displayed. Examine him in the full light. Place him squarely on his legs, devoid of every vestment save the halter. Look at him from every side, carrying in your mind whatever irregularities you may detect. From this position there are many points which you will be enabled to note. You will measure with your eye how he stands upon his legs; their contour, and the conformation of important joints and sections; in a minute you have seen if there exists a curb; if he knuckles at the fetlocks; if he "goes over" at the knees; and many other points of value to be remembered when you begin to look into the details. The more experience one has the more he becomes impressed with the value of a system in examinations. Begin at one point and dissect the live body, with care and with system, using all of your special senses. Starting at the labial muscles, examine everything of importance about the head, mouth, age, pulse, intermaxillary space, eyes, ears, parotid gland, and temporal fossa. Passing down the neck, mark its junction with the thorax, the withers, the shoulders, the anterior extremities, the vertebral column, the chest, trunk; then do for the hind legs what you have done for the front ones,—the hips, the stifle, the hock, and so on to the foot. Examine the inguinal region, feeling the condition of the scrotum, and terminating with tail and anus.

Your animal may have stood this examination with credit, and now you order him to be taken into the street. Though he may have shown no unsoundness at rest, he may develop it when thrown into action. He should be led by the halter, with possibly a foot of liberty, and handled by a hostler who knows his business. He should be trotted toward you, away from you, and in front of you, and displaying a regularity of action which only comes from the perfect working of every joint. If the defects be not in his gait, it may exist in his respiratory apparatus; or there may be abnormalities in his circulatory system. And we should not consider any examination where palpable unsoundness has not been found complete until the horse has been cooled off, after having been well heated up, and again submitted to an examination in ac-

tion. Many imperfections are brought out thus which otherwise would escape our observation.

Now what will we look for to constitute unsoundness? As stated, we will begin at the head, and look for malformations or diseases, employing all our special senses to help us. You are standing directly in front of the animal and you will note his age, which will display the natural or the artificial incisors; if he is a crib-biter; necrosis of the inferior maxilla at the interdental space, or caries of the teeth. Peering into the nostrils, we may find the pathological lesions of acute or chronic inflammation of the Schneiderian membrane; suppuration of the maxillary sinuses, necrosed bones, the ulcerations of glanders, or the petechiæ of purpura hemorrhagica. Dropping the hand into the intermaxillary space, we feel its bony walls for evidences of osteo-porosis or other diseases or abnormalities; and running along the bottom of the hyoid space our hand may come in contact with the hot and painful fluctuating abscess of rhino-adenitis, or the indurated, nodulated adherent swelling of glanders. While stopping a moment here, you have an opportunity of getting the movement of the pulse as the glosso-facial artery turns around the rami of the inferior maxilla. Standing there we will examine very carefully each eye, comparing one with the other, and if our ocular inspection be not absolutely satisfactory the ophthalmoscope will be indispensable, especially so if there is suspicion of periodic ophthalmia, noting the changes in the lens, the vitrous humor, and the circulation.

Mounting to the occiput, one finger will slip into the ear for foreign bodies or neoplasms and pass back over the poll for fistula or the cicatrix of a past one. The hand then seizes the larynx in search of anatomical imperfections, and by a gentle squeeze we test its walls for ossification of the cartilages; and at the same time will be rewarded by an involuntary cough, which may reveal much that will assist us in determining the physiology of the lungs and throat. A look at the parotid region may reveal marks of setons, cicatrization of evacuated abscesses, or traces of blisters, which would give you the history of a past laryngitis. Pressure of the finger in the

jugular groove will dam the blood in a normal vein, and if the dilatation be bassilated in character we would suspect that our animal had been the subject of repeated bleeding, which may have been necessitated by such an unwonted affection as head staggers; or if dilatation does not take place, our vein may have become obliterated from previous phlebitis. It may be that the trachea is irregular or angular, which might have been produced by fracture of a ring or from the operation of tracheotomy, which we know is often followed by the complication of roaring. It would not be out of place here to feed the animal just enough to determine the absence of a jabot, and to see if mastication and deglutition are performed in a natural manner.

The hand and eye passing carefully over the withers would convince us of the absence of fistula, cysts, abscess, or diseased bone in this region; and keeping on down the vertebral column, and pressing with the fingers on arriving at the lumbar region we would expect to see our animal yield gently, as do all horses who are enjoying immunity from renal affections or whose spinal bones have not become ossified. A gross inspection of the sides of the chest may show marks of blisters, the rhythm of respiration or the double movement of heaves. While the ear, placed against the thoracic walls, will give the music of the vesicular murmur, as the air-cells fill in the whole extent of the surface of the lungs.

At the umbilicus we may find marks of hernia, and at the inguinal opening we look for the complications of castration; or if he be a stallion our mind would be at rest if we made a rectal exploration and found the internal openings of the canal alike on each side, thus doing away with the possibility of his being subject to intermittent hernia.

By scrutinizing the penis, or vulva, the tail and the anus, we are then prepared to go into a detailed examination of the extremities.

As a general rule, any lame animal is unsound; and as a rule, we will not discuss whether the lameness is acute or chronic. If he is lame at the time we examine him, he is un-

sound. There are many pathological lesions and structural changes found upon the legs of horses which will not interfere with their action, and it is just here that judgment, reason and experience will stand us in well. It would be unjust to condemn horses for defects which we know will not interfere with their usefulness, or their perfect performance of the work exacted of them.

First we will examine the front legs, and in doing so we will not be hasty. We will observe his general mode of standing; whether his legs are on a plumb-line, in advance of it, or behind it; if too wide apart; or the elbows abducted. At the scapulo-humeral articulation we would look for traces of se-tons or blisters, giving us the history of a past lameness; and while examining here the hand drawn over the spinatus fossa and shoulder joint would discover small tumors from collar-pressure. Possibly we have an atrophy of the muscles of this section, or malformations in the scapular region. The arm will very seldom be found the seat of disease; but at the point of the elbow we find cysts or neoplasms, which are unsightly if not unsound.

Arriving now at the forearm and knee joint, we scrutinize more closely to reinforce the opinion formed while viewing him from the side, and are careful to note if there is a tendency to weak knees, if not absolutely "sprung," and while manipulating this region we may find on the inside of the carpal joint an osseous or fibrous thickening, reminding us that at some time the animal has inflicted speedy cuts or blows, and storing this point away we are careful to note his manner of traveling to see if he has overcome that interference. Around the front of the knee the hand may feel a cicatrix from broken knee, telling us how, at some time, he had fallen upon them, but not necessarily denoting that he is a stumbler. We will find here, too, enlarged bursea, constituting a carpal thoroughpin. We have now descended to the digital region, and along the metacarpals we find splents, which are unsoundnesses in some cases, calling into functional activity the examiner's judgment and knowledge. At the back of this region we find the important tendons which bear the whole



weight of the anterior two-thirds of the trunk at certain times, and are very liable to disease, and should we discover sprains of the tendons, ligaments or sheaths, or indurations from previous inflammations, we know that sooner or later they will give way and the animal will not conform to our definition of soundness.

At the fetlock we will find dilations of tendinous and articular bursa. Much will depend on their dimensions, and it is always policy to direct the attention of the purchaser to them. The region below the fetlock is fraught with many defects, and requires the closest scrutiny and judgment, for here we find that most serious lesion, ring-bone, the simple presence of which requires an unqualified condemnation. Here, too, we will find on the inside, marks of old or recent interfering, while just above the fetlock on both the inside and outside may be found the small cicatrices of neurotomy; or possibly the low operation may have placed the scars below the fetlock. Careful examination of the front foot is one of the most essential points in the examination, and it is best tested by the hoof-searching forceps for bruises or corns, or weak soles; while with the hand we will examine for side-bones, and having the foot raised from the ground we note if the plantar surface is flat or pumiced; if the heels are contracted; if toe or quarter-cracks be present; and our examination is not complete if we have not looked for thrush or canker. All of these diseases or conditions are likely to produce lameness, and our judgment must be formed according to our knowledge of their condition when we are making the examination.

Passing now to the rear in our detailed examination, we glance at the general position of the animal. From the hip to the thigh on each side, noting variations in the size of the two members; the shape of the hocks, and the obliquity of the fetlocks. Standing behind the animal, with one hand on each hip, looking first at the external angle of the ilium on one side, then the other; noting if they are on a level with each other; and at equal distances from the sacrum. Here, too, we may find atrophy of the gluteal muscles of one side, not an un-

soundness of itself, but possibly connected with former lameness. At the coxo-femoral joint evidences of counter-irritation having been applied to overcome positive or fancied disease of this region. Passing the hand down the femur, we reach the stifle, and failing to find anything abnormal, we proceed to that seat of dissent known as the hock. We will remember just here that a healthy hock consists of skin, bone and a few tendons; anything superfluous is abnormal. Around at the internal and anterior aspect of the region, we may discover a dilation of the synovial membrane of the tibio-tarsal articulation, constituting the ordinary blood or bog spavin; or the lesion may be of the tendinous sack of the tendo-Achilles, forming a thoroughpin. At the posterior surface we will look for exostoses and curbs. There is as little unanimity of opinion among veterinarians upon the soundness of horses possessing these defects as there exists among astronomers as to the distance of the furthest fixed star. It is, of course, unnecessary for me to speak of exostoses on the internal aspect of the hock joint, as I think the profession is a unit in condemning every animal possessing such an addition to his anatomy. Personally, I not only reject an animal when they are present, but will not tolerate the suspicion of such a condition. There is another thing to be carefully watched for, and that is the presence of stringhalt. Whatever the pathological lesion may be, it is an unsoundness, and it is sometimes so slight in its incipiency that we may overlook it. Therefore the first movements of the animal in backing out of the stall are of special importance to us, and a quick turn of the animal may produce the symptom where it is latent in the forward movements.

If chronic scratches of the front of the hock is not an unsoundness, it is a great nuisance, and it should be condemned along with chronic greasy heels. Below the hock we have about the same conditions as met with in the anterior extremity, only that interfering is better characterized. Puffy swellings may exist at the fetlocks, and the foot should be examined, especially to note if shod for interfering or over-reaching.

For this hurried and imperfect paper I must make some apology, but I am so sure that I have said a few things which are not in accord with the views of many present, that I feel you will be amply repaid by the expostulations and corrections of out-thinking minds.

## REPORT ON INOCULATION AS A PREVENTIVE OF SWINE DISEASES.

By DR. D. E. SALMON.\*

Inoculation with hog cholera virus was first tested as a preventive for this disease in the experiments of the Bureau of Animal Industry in the year 1886. The method of inoculation was discovered at that time, but the results were unsatisfactory, as the animals were not sufficiently protected, and the experiments have been repeated under various conditions from that time to the present to learn if any modification of the operation would make it more effectual.

Prevention by inoculation depends on the well-known principle that one attack of a contagious disease generally protects the individual from subsequent attacks of the same contagion. The amount of protection received varies greatly with different diseases and different animals. In no case are all individuals protected in this way from any disease, and in many cases the immunity lasts only for a short period of time.

Inoculation in practice consists in injecting under the skin as much of the strong virus of hog cholera as can be given without producing a fatal attack of the disease. Inoculation is very different from vaccination. The virus used in inoculation is the same in variety and strength as that found in animals dying with the plague, while for vaccination a weakened virus is used, which cannot cause a fatal disease. No method of vaccination has yet been introduced for the hog diseases of this country. Inoculation is now being advocated as a preventive for hog cholera, and it should be remembered that this means the introduction into the animal's

\* Reprint from the advance sheets of the Annual Report, 1889.

body of the strong virus of the malady, and it is only a question of the size of the dose whether the disease produced by this operation is mild or fatal in its character.

The dose is not the only factor which influences the result that follows inoculation. The strength of the virus varies so much in different outbreaks of the same disease, that a perfectly harmless dose obtained from one outbreak would certainly be fatal when obtained from another.

There is another influence which has an even greater effect in varying the results of inoculation, and that is the wide difference in the susceptibility of the animals. A dose of virus that will scarcely affect one animal will kill another in the same herd, and there is also such a great difference in the susceptibility in different herds that the dose which might be used on one herd without producing any noticeable effects would set up a disease in another herd and cause the loss of a majority of the animals.

With these varying conditions, which in many cases can neither be foreseen nor controlled, inoculation is an operation which is attended with more or less danger of producing the very disease which we are seeking to avoid. In our experiments we found that a dose of 1 cubic centimeter, *i. e.*, from 15 to 20 drops, of the strongest cultivated virus would occasionally kill an animal. From one-quarter to one-half this quantity, *i. e.*, from 4 to 10 drops, have been given without serious consequences in any case.

Such doses generally produce a swelling where injected, which is at first warm and more or less painful, and later becomes encysted. The centre softens, disintegrates and becomes a purulent mass, which may remain encysted or may force an opening through the skin and discharge for several weeks. An inoculation of this kind produces a slight degree of immunity, because a second inoculation can then be made with two or three cubic centimeters of virus, *i. e.*, with four to twelve times the first dose, and still no fatal effects result.

The second inoculation increases the immunity, but still the animals are not able to resist the effects of feeding with strong virus or exposure in pens where sick animals are kept.

We inoculated about fifty animals in this way in our first experiments, varying the doses somewhat, and only five of them resisted the first exposure. By giving two inoculations we, of course, get a greater degree of protection than can possibly be obtained from one inoculation, with safety to the animals, but the expense of two inoculations is so great that, in order to make the method practical, the inoculator gives only one dose and generally increases that beyond the limit of safety. Thus, in some experiments that have been made in the West, I am informed that a dose of 1 cubic centimeter, *i. e.*, from 15 to 20 drops, was given, and many herds contracted the disease and died, as should have been anticipated from the experiments previously made by the Bureau of Animal Industry.

In view of these facts, when any one comes before the farmers of the country and recommends inoculation, it is well to inquire whether he is interested in the operation from a pecuniary point of view. The question as to how much the farmer will save by the adoption of this method of prevention is uncertain, and opens a wide field for discussion, but the sum it will be necessary for him to pay out to the experts who must be employed can be very accurately figured. This is one of the most practical aspects of the question and should under no circumstances be overlooked.

It has been asserted that as many as one hundred and four hogs have been inoculated in seventy-two minutes. At a cost of 50 cents a head, which is the amount now charged for inoculation, this would reach the sum of \$43.33 an hour for the services of the inoculator, which certainly appears to be more than those engaged in the hog-raising industry can afford to pay for professional assistance.

Should inoculation be generally adopted in the States in which hog raising is most largely carried on, it would require at least fifty men working five hours a day to comply with the demands. These men, inoculating eighty hogs an hour each, would inoculate a total of twenty thousand hogs a day, which would yield a daily revenue of \$10,000. The total cost of hiring fifty men and maintaining a laboratory to supply virus would hardly exceed \$300 a day. Putting the expenses at

the liberal sum of \$500 a day, the net profit to those conducting the inoculations would be \$9,500 a day. The inoculation of but a small portion of the hogs in the chief hog-raising States of the country would therefore yield a profit to the inoculator of about \$3,000,000 per annum, a sum which is sufficient to account for many of the enthusiastic and exaggerated statements of the benefits to be derived from inoculation which have appeared in public prints.

It has been shown by our experiments and by those of other investigators, that if a sufficient dose of virus is given to produce any degree of immunity the hog will be more or less stunted, and if the strong virus is used, there is great danger of infecting the ground. Now, these two faults are inherent in the method; they cannot be avoided, and it is impossible to so improve the operation as to overcome them. About a year ago an attempt was made to demonstrate the success of inoculation by inoculating one thousand hogs belonging to farmers in Nebraska. There had been quite a controversy between parties in that State for more than a year as to the merits of the operation, and undoubtedly every precaution known to the operators was practiced to secure a successful issue for this experiment.

The director of these experiments afterwards reported in the *Nebraska State Journal* of December 16, 1888, that one party who had 260 hogs inoculated had lost 220. Another farmer who had 46 inoculated lost "nearly all." Still another who had 121 inoculated lost "a large number," while a fourth who had 93 inoculated, lost "all but 18 or 20." It is evident from these statements that out of the 1,000 hogs inoculated, the loss was very little, if any, less than 400 head. The disease in these cases appeared in the inoculated herds from ten to fifteen days after the inoculation, and was evidently introduced in most if not in all cases by this operation.

These experiments show that inoculation is attended with very considerable danger to the health and lives of the animals operated upon. It is no doubt possible to so reduce the dose of the virus as to prevent this heavy mortality following the inoculation, but in that case the protection would be cor-

respondingly less. Leaving out of consideration the question of whether the hog, in case he survives the inoculation, is protected from the disease, it is plain that an operation which is followed by four hundred deaths out of a thousand inoculations has not been sufficiently perfected to merit the confidence of the farmers.

We will now turn for a moment to the question of the protection by the operation. To what extent were the hogs inoculated in Nebraska protected from the contagion, if really exposed to it? The advocates of inoculation tell us that it has been impossible for them to give the disease to their inoculated hogs. Our experiments at Washington show that nearly all inoculated hogs can be afterwards fatally infected with cholera. Did the animals inoculated in Nebraska receive any greater degree of immunity than those which were inoculated in Washington?

The Board of Inquiry appointed by the Commissioner of Agriculture in 1888, procured a number of hogs that had been inoculated in Nebraska (about seventeen), and tested them by feeding them with cultivated virus of hog cholera and by inoculating them with the virus of hog cholera and swine plague. In each case a number of the animals that had not received the protective inoculation were used in the experiments to determine the effect of exposure upon ordinary swine. The first test was made by feeding cultivated virus, but this did not prove strong enough to kill any of the hogs. Even those which had not been inoculated survived, but all of the hogs, including those that had been inoculated, were very sick. The inoculated hogs were not quite as sick as the others, but there was very little difference. Four of the inoculated hogs from Nebraska, and five hogs from Pennsylvania which had not previously been inoculated, were then inoculated with the virus of the disease known as infectious pneumonia or swine plague. Of the four Nebraska inoculated hogs, three died and one recovered, but this one when subsequently killed for examination proved to be very severely affected. Of the five hogs which had not been previously inoculated one died and four were sick and recovered. When

killed for examination one of the four was found seriously diseased, the three others were either slightly or not at all affected.

Still later four Nebraska inoculated hogs and two other hogs which had not been inoculated were fed upon the viscera of hogs which had died of hog cholera. Two of the inoculated hogs and the two that had not been inoculated contracted hog cholera and died. Two of the inoculated hogs remained well.

As a last test, the remaining six animals from Nebraska were inoculated by intravenous injection of the cultivated virus of hog cholera. Of these, three had been inoculated with hog cholera virus, and had been inoculated with the sterilized liquids in which hog cholera germs had grown, and two had recovered from an attack of hog cholera. The four hogs which had received the protective inoculation all died. One of the recovered hogs died and the other resisted the virus and remained well.

It is quite evident from these experiments that the animals inoculated in Nebraska were fully as susceptible to hog cholera after the operation as were those which had been inoculated in the experiments of this Bureau in Washington.

The conclusion that inoculation is not a satisfactory preventive for hog cholera is by no means inconsistent with the results obtained in investigating other diseases. Various experiments have shown that the protection which follows one attack of a disease or which is produced artificially by inoculation or vaccination is by no means absolute. It is simply an increased power to resist that particular contagion, and it may be sufficient to guard against the small doses of the virus which with most diseases are all that an animal is exposed to under ordinary conditions. But if from any cause a larger quantity of the contagion finds its way into the animal's body, it will contract the disease in a fatal form in spite of the immunity derived from a previous attack or from inoculation. This was strikingly shown in the writer's experiments with fowl cholera (Report Department of Agriculture, 1881-'82, p. 289) and by the researches of Professor Chauveau with an-



thrax. While therefore it may be perfectly practical to prevent by inoculation those diseases in which the contagion does not multiply outside of the body, and with which the attack is caused by a small quantity of virus floating in the air or adherent to the wood-work of buildings, it may be much more difficult or impossible to prevent that other class of diseases to which hog cholera belongs, and which are caused by germs that multiply freely in water, in the soil, and in moist organic matter, and which are consequently taken into the body in enormous quantities, especially by swine.

There is another very important consideration which bears upon the practicability of preventing swine diseases by inoculation. Hogs inoculated with hog cholera virus do not receive the slightest degree of protection from any other disease. As there are at least two contagious diseases of hogs in this country, both of which are widely scattered and fatal, we cannot hope by any single inoculation to prevent all the losses caused by contagious diseases of swine. To inoculate for two diseases would double the expense, and this would be a very serious objection to such a method of prevention. The existence of two diseases has been very vigorously denied, but the conclusions of the Bureau of Animal Industry on this subject have now been confirmed not only by the Board of Inquiry appointed to consider this question, but also by Professor Welch, the eminent pathologist of Johns Hopkins University. In the future, therefore, the conclusions as to the economy of preventing swine diseases by inoculation must be based upon the assumption that there are at least two diseases, each of which will require a special inoculation for its prevention.

This brings us to the final test which must be applied to all methods of prevention, and that is their economic results. We will now consider inoculation from this point of view. Leaving out of consideration for the present the many reasons for believing that inoculation is a dangerous operation, and that it does not do what is claimed for it in the way of prevention, we will compare the cost of preventing hog cholera by this operation with the amount of the loss caused by this disease.

According to the estimates of the Statistical Division there are about 50,300,000 hogs in the United States. The inoculation of these at 50 cents per head would cost \$25,150,000. The total loss from disease during the year 1888 was 3,105,000 hogs at an average value of \$5.79 each. This would make the total loss of swine from all disease \$17,980,000. In order to estimate the loss from hog cholera we must deduct from this sum the losses from ordinary diseases, such as animal parasites, exposure, overcrowding, and improper feeding, which are always acting and do not produce epizootic diseases. These losses were estimated by the Statistician of the Department in 1886 to be about 4 per cent. of the total number of hogs, but as this may be considered rather a large estimate, we will in our calculation take 3 per cent. as the average loss from such causes. This would amount in 1888 to 1,509,000, valued at \$8,737,000, and deducting this from the total loss of swine, we have remaining \$9,243,000 as the losses from epizootic swine diseases. In the present condition of our knowledge we must admit that there are at least two entirely distinct epizootic diseases of hogs, which have been referred to in the reports of this Bureau as hog cholera and swine plague. The exact proportion of the loss caused by each of these diseases is at present unknown, but if we admit for the purposes of this calculation that but one-third of the loss is caused by swine plague, we have remaining a loss of but \$6,163,000 for the year 1888, which can be attributed to hog cholera. To prevent this disease by inoculation, as we have just seen, requires the expenditure in cash of \$25,150,000, or more than four times the value of the actual losses. In addition to this expenditure there should be counted the time required of the farmer in handling the hogs at the time of the operation and in giving them such precautionary care and in practicing such disinfection as is required to make this operation at all successful.

We should reach the same conclusion if, instead of estimating the loss and expense for the whole of the United States, we should take a single hog-raising State, as for example the State of Illinois. According to the Statistician's

estimates, there are 5,275,000 hogs in Illinois, and to protect these by inoculation would cost \$2,637,000. In the year 1888 the total loss of hogs in that State from all diseases was about 316,500, with an average value of \$7.45 each, which would make the loss for that year \$2,359,925. Deduct a loss of 3 per cent. of all the hogs in the State as caused by ordinary diseases, and we find that this would amount to 158,250 hogs, worth \$1,178,962. Deducting the losses caused by ordinary diseases from the total losses from all diseases and we have \$1,180,963 left to represent the loss from both hog cholera and swine plague. Take from this one-third to represent the loss from swine plague, and we have remaining as the loss from hog cholera about the sum of \$800,000. To prevent this loss by inoculation, as we have seen, would require \$2,637,000, or more than three times the sum to be saved.

While it is evident from these figures that inoculation can not be recommended for general adoption under the conditions in which the operation must now be performed, it is conceivable that there may be special cases in which it may be found advantageous, provided its protective power is fully demonstrated. At distillery establishments where large numbers of hogs are purchased for feeding, and where the losses are necessarily heavy from epizootic diseases, inoculation might prove an economic measure, but before deciding this question it would be necessary to have more definite data in regard to the average loss in these establishments.

Again, inoculation might prove efficacious in cases where considerable numbers of hogs are purchased at a distance by farmers for feeding. In this case there are unusual opportunities for infection during transportation, and experience shows that the loss from epizootic diseases is unusually heavy. Here also it would require considerable experience before it would be possible to say whether the operation would be a financial benefit.

The operation is also being tried by breeders of thoroughbred swine in some sections. In this case there are animals of much more than average value to be protected, and, at first sight, it would appear that an outlay of 50 cents per head

might be afforded in case any immunity could be assured. It should be remembered, however, that in case there should be considerable losses from inoculation, this would be more severely felt with high-priced animals than with those of average value. Another consideration even more important appears to have been overlooked. In inoculating a herd the contagion of the disease is introduced upon the premises, and in spite of any precautions which can be observed the grounds will be infected. This infection remains a considerable time, and the experience of those who have had herds inoculated is said to show that if any uninoculated hogs are added to the herd they are very liable to contract cholera and succumb to the disease. If this observation is correctly interpreted, it is apparent that hogs sold from such herds for breeding purposes are liable to convey the disease to the herds into which they are introduced. This being the case, no breeder could afford to have inoculation practiced on his herd, because none would buy from him knowing that there was danger of introducing a fatal disease with the animals purchased.

The considerations mentioned above, which our present information demonstrates to have a bearing upon the subject of inoculation, should be taken into account by swine breeders before the adoption of this operation. There are undoubtedly other arguments for and against inoculation which greater experience will bring out, but we can only form a reliable opinion of its availability by reasoning from the knowledge at hand, and this we have endeavored to set forth with as much detail as is practicable in a report of this character.

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## THE INSPECTION OF MEAT AND MILK WITH SPECIAL REFERENCE TO TUBERCULOSIS.\*

BY MR. A. W. CLEMENT, V.S., OF BALTIMORE.

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The subject of preventive medicine is one of such vast and growing importance to the public, that some action by the

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\*Read at a special meeting of the Maryland State Veterinary Medical Society, January 23, 1890.

veterinary profession in Maryland, as represented by this the State Veterinary Society, seems advisable; and as all that can be done, with the resources at our command, has perhaps been accomplished, the present is thought to be a fitting time for the presentation of a few facts. Whatever the public finds necessary for its comfort and well-being it is very apt to have, provided that it is convinced of the necessity, and provided that the cost is not out of proportion to the benefits to be derived. Our subject involves questions undoubtedly complicated, and those which should be thoroughly discussed. As members of the veterinary profession, it is our right and privilege to advise the public upon questions of public health which are, beyond doubt, connected with the consumption of meat and milk, and the association of man and animals.

That certain infectious diseases are common to both man and animals is well known to the practitioners both of human and of veterinary medicine. It is also known that the only possible chance of infection in certain diseases is through the consumption of meat which harbors the infecting principle; and that in many other diseases the flesh and milk of animals used for food, while not the only source of infection, yet play an important part in the propagation thereof.

Now, if our opinion is to have any weight it must, above all, be candid. To alarm the public by an exaggeration of facts would not only be wrong, but would not further our purposes. To tell them that by the appointment of one or two veterinarians as inspectors of the meat supply they can have absolute, or anything like absolute, protection against the dangers of infection, would be but deception for the moment. To tell them, moreover, that the meat which they eat and the milk which they drink is in the majority of instances likely to convey infection, would be a gross exaggeration of the facts. Nevertheless, we who come in contact daily with the cattle slaughtered for the city market, know that much of the meat offered for sale is a quite possible source of disease, and one which can, to a greater or less extent, be avoided.

A disease which costs more lives by far than any other, is tuberculosis, or what is commonly called consumption. One

person in every seven born into the world dies of this disease, and probably one-third of the autopsies made upon persons dying from different diseases, including tuberculosis, will present lesions of this disease, either active or healed. It is a disease confined to no particular class of persons and bounded by no geographical limits. It is common to a greater number of species of animals than is any other disease known to medicine. In fact, it is quite probable that no species of animal living is absolutely immune or proof against its attack.

Certain conditions of life, such as domestication in the lower animals, and the crowding together, and lack of sanitary precautions in the human species, undoubtedly favor its development. How often, however, do we see those comfortably housed and surrounded by all that wealth can procure, fall victims to its attack. How often, in our own profession, do we see registered cows, so highly valued by their owners, surrounded by all the comforts possible, kept in stables where the sanitary arrangements are well-nigh perfect, or allowed in suitable weather, to graze upon the finest pastures—how often, I say, do we see such animals gradually lose in flesh and in the flow of milk, until they finally die, or become so valueless as to pass from the rich man's stable to the shed of one who is, to a great extent, dependent upon his cow to give him milk upon which to rear his family. In many other cases a cow with like history goes to form one of a number of similar animals constituting the dairy which supplies what purports to be pure milk to its customers. Then, too often, after she has been milked until, from the steady advance of the disease she ceases to produce enough to pay her keeping, the glue factory is cheated, at the expense of the citizens who buy her in small pieces at the stalls in our market places. Of course this is not first class meat, but it forms a very considerable proportion of the meat from which sausages are made.

We know, moreover, that tuberculosis does not always produce such extreme emaciation in cattle as in the cases above cited. How often do we see cattle slaughtered, the lungs and glands of which are filled with "boils," to use the expression common among the butchers, but whose flesh is

quite up to the standard, so far as appearances are concerned, at any rate. Yet is not the flesh as apt to contain the virus in the one case as in the other? I am well aware that the flesh may not contain the virus to any appreciable extent in either case, and that, moreover, if it does, the process of cooking and the healthy condition of the digestive apparatus in the consumer may render it inert; yet it has not been proven that infection may not take place by consumption of such meat, and many of our best authorities are of the opinion that it can and does. The exact behavior of the tubercle bacilli under the conditions ordinarily present in the process of cooking has not yet been determined. To raise, in this process, the meat to a temperature necessary to make sure that all the organisms are killed, would involve a hardship, to say the least, to those of us who like our beef rare and juicy. I imagine that most of us, if we had our choice, would prefer to take our chances of infection that we might have our beef a little underdone.

It is not my purpose here to discuss the etiology of tuberculosis, but to assume beyond all doubt that it is due to a micro-organism known as the tubercle bacillus, first described by Koch in 1882. His work was so complete that no one has as yet been able to add to it anything of importance. It was a discovery which has taken such a hold upon the minds of the medical profession, that he who disbelieves it to-day is one who will not change his opinion, or one who is unacquainted with the present methods of investigating infectious diseases. I will not detain you with a description of the organism, further than to say that it is a bacillus, or rod-shaped object, about one-third as long as the diameter of a red blood corpuscle, and about one-tenth as broad as it is long. It has the property of resisting the action of acids in specimens stained with aniline colors, which serves to distinguish it from other organisms. It grows slowly and only in certain media, preferably blood serum and glycerine agar. These organisms are found in all the tissues in which the lesions are present and in the fluid from the affected parts. The organism is the same, no matter what species of animal it may affect.

If a piece of tissue from man, containing the organism, be inoculated into an animal, the chances of infection are in proportion to the susceptibility of the animal inoculated. If the same lesions are to be found in man and animals, if the progress of the disease is the same in both individuals, and if the same organism is found in each, can any one doubt the identity of the disease in man and animals?

As I said in the beginning of this paper, the disease is the greatest scourge with which we have to deal. None of the so-called highly infectious diseases, such as cholera, yellow fever, small pox, can compare in mortality with it.

In Paris in the year 1884, a year taken at random, out of 56,790 deaths, about 15,000 persons died from tuberculosis, that is, a little over one-fourth of the deaths were from this disease. In Baltimore, for the year 1888-1889, the total deaths were 8,703, of which number 1,147 were due to tuberculosis. In New York City, for the year 1888-1889, there were 5,913 deaths from this disease. These data give only the mortality from tuberculosis, and doubtless chiefly pulmonary tuberculosis. There is reason to believe that many deaths from tuberculosis affecting the joints, bones, lymph-glands, serous membranes and still other parts than the lungs do not appear in proper proportion in these reports of death rates. Moreover, a large number affected with tuberculosis recover.

The percentage of deaths in animals from this disease it is of course impossible at present to obtain. There are, however, some statistics with regard to the proportion of animals affected with tuberculosis as found at abattoirs and slaughter-houses, and, though of course less reliable, from ante-mortem diagnoses. In the report of the proceedings of the last International Veterinary Congress, the following statistics are given: From the abattoir at Brussels for 1889, the percentage of tuberculous animals is given as follows; 1.2 per thousand for steers; 1.9 per thousand for bulls; 19.9 per thousand for cows, 0.1 per thousand for calves. In Amsterdam, out of 13,207 cattle, 268 were tuberculous—2 per cent. Out of 15,827 hogs, 63 were tuberculous, 0.4 per cent. At Utrecht,



where no abattoir exists, the percentage of cases observed is placed at 0.24 per cent. (8 out of 3,250 cattle). In Saxony, according to Siedamgrotzky, the general proportion would be 2 per cent., but in certain cities where the inspection and the abattoir are imposed, the percentage is much higher—16.6 per cent. at Frankenburg, 17 per cent. at Penig, 19.9 at Döbeln, 22.4 per cent. at Zittau. Tuberculosis is frequently observed in calves. In the Argentine Republic, the proportion of tuberculous cattle is reported as from 10 to 15 per cent. for those imported into the country, as against 0.5 per cent. for natives. According to Liautard, the proportion of tuberculous cattle in the United States is from 25 to 30 per cent. In Copenhagen, for the past year, the general statistics give a proportion of 6 per cent.; it is much higher for cows, being 16 per cent. At the abattoir of Montauban, the proportion is given as 6 for one thousand. In Russia, the disease, unknown among the animals indigenous to the south, is very frequent in the north, especially among those imported and those kept in stables; it sometimes runs as high as 50 per cent. In the abattoir at Bucharest, the proportion is sometimes as high as 30 in 100.

At the Berlin abattoir, which probably furnishes the most trustworthy statistics in existence, the official report\* for the year 1887-'88 show that a total of 924,815 animals were killed. "The entire carcass was condemned as unfit for human food in 5,783 cases, the cause of seizure being shown in the following table:

Disease.	Number of Animals.
General tuberculosis	2,435
Caseous pneumonia	14
Peritonitis	6
Dropsy	298
Scrofula	1
Ruptured stomach	5
Jaundice	84
Loathsome character of the flesh	131
Bloody	36

\*Adam's Wochenschrift, No. 6, February, 1889.

Disease.	Number of Animals.
Rothlauf - - - - -	399
Trichinosis - - - - -	311
Tapeworm hydatids - - - - -	1,926
Echinococci - - - - -	1
Actinomycosis - - - - -	69
Calcareous concretions - - - - -	67

Besides these cases of total seizure, single organs and parts were condemned from 23,297 cattle, 9 calves, 9,051 sheep, 19,459 pigs. There were also withdrawn from consumption 2,727 unborn but nearly developed calves, 7,993 calves in less advanced stage of development, and 157 animals that had died. Tuberculosis was detected in 4,300 cattle, 8 calves and 6,393 pigs, and on account of that disease the entire carcasses of 985 cattle, 8 calves and 1,442 pigs were condemned, while 8,322 organs or parts were withheld from consumption. The actinomyces in the muscles led to the seizure of 69 pigs, and 67 in addition were condemned for calcareous concretions. In the cases of partial seizure, the following parts and organs were condemned: for the presence of echinococcus, the lungs of 5,128 cattle, 3 calves, 3,348 sheep and 3,681 pigs; and the livers of 1,887 cattle, 2,436 sheep and 4,715 pigs. The presence of the liver fluke led to the condemnation of the livers of 2,108 cattle, 2 calves, 2,212 sheep and 137 pigs. The presence of thread worms led to the withdrawal of the lungs of 788 sheep and 3,237 pigs. No fewer than 249 persons are engaged in connection with the meat inspection in the city of Berlin.

In the quarantine limits around Baltimore, that is, for a distance of six miles from the City Hall, an accurate account is kept of the cows slaughtered. Dr. G. C. Faville, at the head of the United States Government Inspection Service in Maryland, furnishes me with the following statistics: From November 1st, 1888, to November 1st, 1889, post-mortems were made on 5,297 cows, showing 159 cases of tuberculosis, which is a little over 3 per cent. The above data refer chiefly to pulmonary tuberculosis. In those cows dying within

the quarantine limits around Baltimore, upon which a careful autopsy can be held, tuberculosis is sometimes seen confined to organs other than the lungs, so that the percentage should really be higher.

The percentage of tuberculous cattle in which the tubercle bacillus has been demonstrated in the milk, is, according to Bollinger, as follows :

In a lot of cows affected with extensive tuberculosis, 80 per cent. showed infection of the milk. In a lot with moderate tuberculosis, 66 per cent. showed infection of the milk. In a lot with slight tuberculosis, 33 per cent. showed infection of the milk. Drs. Ernst and Peters, in some valuable experiments made at the experimental farm near Boston, fed 13 calves and 7 pigs, healthy at the beginning of the experiment, on the milk of 18 tuberculous cows, taken from ten different herds, representing eight towns, all within a radius of twenty-five miles from Boston, except in one instance where a cow came from Newport, R. I. The feeding was continued for a period of from three to six months. At the end of this time they were killed and the post-mortem examination showed that six of the calves and two of the pigs were tuberculous. Nine of the eighteen cows were killed, and the diagnosis verified by post-mortem examination. Tubercle bacilli were found in the milk of six of these cows. These experimenters have proven that the milk of tuberculous cows may convey infection when the udder is free from any tuberculous disease. Dr. Peters informs me by letter that he has visited several herds in the State of Massachusetts, and found the disease in from 1 to 100 per cent. of the animals. The same gentleman has published a report of a case which came under his observation, where a pet dog became affected from eating the sputum of its tuberculous mistress.

Prof. Peuch publishes an interesting note\* on the contagion of tuberculosis. His experiments are as follows :

“ I. By the unboiled milk. (1). A pig two months old was fed for a period of five days with the milk of a cow affected

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\*Revue Veterinaire, December, 1888.

with extensive tuberculosis. The autopsy on this cow established the existence of tuberculous lesions in the mammæ. At the end of 56 days the pig was killed, when it presented no lesions referable to tuberculosis. (2). Four rabbits received by injections into the abdominal cavity the milk from a cow extensively tuberculous, in doses of ten, twenty and thirty grammes, during a period of five days. All these rabbits became tuberculous. The extension and the multiplication of the lesions was directly proportional to the quantity of milk inoculated.

“II. Contagion by the uncooked meat. (1). Two pigs, two months and a half old, were fed during a period of ten days, each five and a half kilogrammes of uncooked meat, taken from the cow above cited. This meat was entirely consumed. One of the pigs, killed at the end of seventy days, presented some tuberculous granulations in a ganglion under the tongue and in a mesenteric ganglion, as well as in the liver. The other showed granulations in the mesenteric ganglia. (2). Three rabbits received a hypodermic injection, each two-tenths of a cubic centimeter of juice taken from the meat of the same animal from which the pigs were fed. These three rabbits presented, at the autopsy, some very pronounced tuberculous lesions.

“III. Contagion by the juice of the flesh of a capon dead from tuberculosis. The muscle of this capon being pressed furnishes a red juice which is inoculated into three rabbits in doses of one, two and three cubic centimeters. Killed at the end of sixty, eighty-three and one hundred and twenty days. All of these rabbits presented, at the autopsy, numerous lesions of tuberculosis.

“These experiments tend to prove:

“1. That the milk coming from tuberculous cows is virulent.

“2. That the juice from tuberculous meat is also virulent.

“3. That the virulence of these products is less pronounced by gastric ingestion than by subcutaneous inoculation.

“4. That the effects of this virulence are correlative to the quantity of matter inoculated.”

In a review published in the *Revue de Medecine Veterinaire*, July 15, 1889, the following summary of recent views appears:

“Before becoming a general malady, tuberculosis is a local disease limited to the entrance which corresponds to the territory of invasion and of the primary development of the specific bacilli.

“A primary generalization from the beginning can only be produced experimentally by the introduction of the bacilli into the circulatory system. Practically the generalization of the malady is always secondary, since, according to Weigert, it is only observed in those individuals affected by the disease where a soft focus has opened into a blood vessel or thoracic duct.

“From a hygienic point of view, it does not concern us to know whether the tuberculosis is local or general, but whether the meat of animals affected with tuberculosis may or may not be admitted for consumption. This question has been treated and discussed at the Congress for the study of tuberculosis in 1888. The great majority of the members of this Congress were in favor of the rejection of this meat for human consumption in all cases of tuberculosis.

“At the same time, Bollinger has never been able to transmit tuberculosis by injection into the peritoneum, of the juice of the muscle-flesh taken from twelve tuberculous cows.

“M. Nocard, experimenting with the juice of the flesh of twenty-one cows affected with extensive tuberculosis, was able to transmit the disease to a guinea pig in only one case.

“M.M. Toussaint, Chauveau, Arloing, H. Martin, Vallin, Peuch and Galtier, on the other hand, have reported several experiments where the muscle-juice has shown itself to be highly virulent.

“M.M. Gratia and Lienaux bring forward, in their turn, a series of experiments to clear up this question of the virulence of tuberculous meat. In their hands, the muscle-juice from a man attacked with general tuberculosis showed itself virulent in both cases in two inoculations practiced on guinea

pigs, while that from the juice of a tuberculous cow, gave them, under similar circumstances, a negative result.

“The experiments of MM. Lienaux and Gratia have been neither numerous enough nor varied enough to permit these authors to draw conclusions, and they themselves propose to extend them.

“In the present stage of the question, it is demonstrated that the juice of tuberculous meat may be sometimes virulent, if it is not always so. Now, from a hygienic point of view, there is danger in allowing the consumption of this meat, whether it has been proven to be virulent or not. Inasmuch as it is not possible to separate definitely those which are from those which are not virulent, one will do well to consider all as dangerous, and for this reason to reject them for human consumption. The public will not be compromised for that, and there will be fewer cases of tuberculosis. In our opinion, the tuberculosis Congress has deliberated wisely in expressing the opinion that the meat of tuberculous animals should be rejected for human food\*.”

Since this publication it has been proven under Bolinger's direction that the muscular tissue from human beings affected with pulmonary tuberculosis, may convey tuberculous infection to inoculated animals.

We might go on citing experiments, but I think that enough has been presented to show that there is danger from the consumption of meat, and that there is more danger, especially to the young, from the consumption of milk from tuberculous animals. I wish now to call your attention to some conclusions which have been reached by the International Veterinary Congress and the United States Veterinary Medical Association, also to offer a few suggestions of my own with regard to the better control of the milk supply, and perhaps the meat supply, of Baltimore, and to put in a claim on the part of the veterinary profession for representation at no distant time on the City and State Boards of Health.

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\*Annales de Belgique, Decembre, 1888.

## REPORTS OF CASES.

*“Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science.”*—VETERINARY RECORD.

## JABOT—CONSTRICTION OF THE ŒSOPHAGUS.

BY J. P. KLENOH, V.S

In the February number of THE AMERICAN VETERINARY REVIEW, Dr. R. R. Morrison published a very interesting article on the obstruction of the œsophagus. As a proper addenda to that article, I will report two similar cases of my personal observation for the purpose of bringing more light on the subject.

Several years ago I attended a two-year-old colt that was fed on straw, choking and unable to swallow for three or four days. I found the œsophagus dilated from the pharynx down its course for ten or twelve inches. The colt was every few seconds suffering from convulsive coughing, shaking its head violently as if suffering from strangulation. At the lower end of that pouch I could clearly notice the œsophagus to be firmly contracted; mouth and nostrils were soiled with masticated straw and saliva. While the colt held the head low, I passed the contents of that pocket gently with both hands towards the pharynx, and the animal would eject them through mouth and nostrils. Thus I succeeded in emptying several times that artificial jabot and caused the colt to swallow water and a little bran mash, which fact convinced me that there was no total obstruction of the œsophagion canal. But after an interval of a few minutes, the pocket would fill again up to the pharynx and the same paroxysms of convulsive coughing and strangling returned. That colt died.

On October 26th last, I was called at three o'clock A.M. to visit a colt, two years old, belonging to Messrs. Alexander Bros. near Santa Rosa, California.

*History.*—Three weeks before my visit they noticed this colt having, while running in an alfalfa pasture, a big lump on the neck, near the breast. This lump went away, came back, and disappeared again, without ever having, to their knowledge, caused the colt any visible trouble. They took the colt

up five days before my visit, to break him to harness, and fed him on hay and grain. He ate well and showed no sign of a lump on the neck. On October 26th, at night, while the colt was near through eating his ration of hay and corn, the proprietors noticed the animal to have violent cramps of the neck, causing great agony and distress.

*Symptoms.*—I found the colt standing away from the manger, saliva dripping from the mouth and nostrils. On the lower portion in front and somewhat to the left side of the neck, I noticed a tumor, firm and solid on pressure, covered by the sterno-maxillary and Lyoidien muscles, so that it was very difficult to give the real size of the tumor. However the enlargement took in the third lower portion of the neck. On pressing this tumor the colt contracts spasmodically all the cervical muscles, stretching out the head or the neck which is partially lowered, while at the same time the animal is squealing loud from pain, coughing and ejecting, through the mouth and nostrils, large masses of saliva and mucous. Between the spasms the colt swallows saliva, gulping the same with difficulty, and gradually filling up the œsophagus from the tumor to the pharynx, when another spasm comes on. The physiognomy of the colt, during the spasms, is similar to the expression of animals during the act of vomiting or nausea.

*Diagnosis.*—Constriction of the œsophagus and artificial jabot filled with feed.

*Prognosis.*—Very serious, perhaps fatal.

*Treatment.*—Friction every half hour on the neck along the course of the œsophagus, with the following liniment: laudanum and fluid extract of belladonna ea. ℥i; gr. arnica, ether and camphor spirit, ea. ℥ii; a hypodermic injection of  $\frac{1}{4}$  grain of morphine was made on the left side of neck. Half an hour after the second friction the colt seemed to be easier and the spasms did not return so frequently. The frictions were continued all the night. In the morning, six o'clock, the tumor was softer, but still containing feed, the muscles relaxed over the tumor; the animal felt at ease, drank water very carefully; there are no cramps on pressing the tumor, even when roughly manipulated. I then injected up in the mouth a mixture of ginger tr. ℥ss; tr. gentian,



℥i; ether, ℥i; water, ℥ii. Half of that quantity was given and the animal began to have very violent spasms of the neck, ejecting, through mouth and nostrils, finely masticated feed and saliva. Those cramps lasted several minutes, when the colt suddenly appeared to be very easy, resting the head on the manger in a sleeping manner. Noticing that, I approached to examine the tumor, but, to my surprise, it had entirely disappeared. Those injections were repeated during the day three times at the interval of three hours and no more tumor reformed, nor did any more spasms reappear. The jabot still exists, but without its contents. The colt eats hay, drinks water and swallows without difficulty. I gave before leaving order to turn the colt out again on the grass, to give no grain nor corn, nor put him to work for three months. On November 12th I revisited the patient and found still the existence of a small, soft tumor, that can be easily reduced and pressed without pain. I had him taken to the barn, fed on corn and hay in my presence. He swallowed large balls of masticated food regularly without trouble. I saw these food-balls pass down the œsophagus in the jabot, come out distinctly under the muscles, leave the jabot and continue their passage to the stomach without causing the least spasmodic pain. The proprietor remarked to me that a few days after my first visit the colt had several spasms again and that the lump reappeared again large and full; but that by injecting the above mixture, he relieved the animal immediately of all distressing symptoms.

*Remarks.*—Of the three cases now on record, the direct cause of the complaint can be traced in one to dry food (straw) that was not sufficiently salivated; in the second one,) to green alfalfa, that was probably too voraciously swallowed; in the third case, reported by Dr. R. R. Morrison, to a supposed carrot (although masticated food was found in the jabot). From the similarity of the symptoms in these three cases, I can reasonably conclude to the existence of the same nature of disease, so that in all certainty, there was no total obstruction in any of them. In all three cases an intense irritation of the ganglionar and pneumo-gastric nerves was manifestly expressed by the lightest pressure on skin or mus-

cles of the cervical region and by convulsive coughing.

I have seen, many years ago, a total obstruction of the œsophagus caused on a horse by a large medicated pill, for four days without producing any spasms of the neck, although there was profuse salivation, great general debility and tympanization of the abdomen. I have observed similar symptoms, without spasms, on several cows that were fed on corn cobs. Would not the difference in the symptoms lead one to suppose that in some cases the disease was directly caused by a foreign body, while in many other cases by a nervous constriction of the œsophagus previous or posterior to the dilatation of the same. For the successful result of my treatment in the Santa Rosa case proves evidently that the disease was not cured after jabot was emptied, and that the constriction as well as the jabot still existed in parte as in toto. This effect of the sedative treatment demonstrates that by calming the nervous irritation it modified or alleviates the disease, and produced a temporary cure. The filling of the jabot would then be a consecutive effect. The existence of the jabot does not constitute the disease; it is only a pathological defect or abnormality. Whether this opinion is correct or false, the fact remains established that in a good many cases the diseases can be alleviated and perhaps cured by therapeutic means without performing the œsophagotomia. Unless the obstruction be directly caused by a foreign body I would advise to try at first morphine and the sedative liniment and empty the jabot by administering the above stimulating and irritating mixture, then remove the constriction by repeatedly drenching the animal with a few ounces of belladonna and hyosciium oil and external application of the sedative liniment.

As for the final result of this jabot, I cannot say whether or how they disappear, as I have lost my Santa Rosa case out of sight. But I think that whenever there is no laceration of the œsophageal muscular fibres, the dilated portion will gradually retract in young horses, if they are carefully fed for several months with small rations of dilute or fluid feed, cut hay, fed moistened, or green grass. In case of laceration, the operation is indicated.;

## TWINS IN A MARE.

BY GULIAN C. FAGAN, D.V.S.

This morning a case came under my charge that may be of some interest to you on account of its rarity.

In August last a bay road mare about thirteen years old, was served by the thoroughbred stallion "Blast," and my services were solicited from time to time to examine the mare's condition. Everything progressed nicely until early this morning, when the owner noticed the mare very uneasy and sent for me.

On my arrival was surprised to find the mare had aborted *twin* foetuses (male and female); the combined weight of which was about fifty (50) pounds. Each foetus had its separate membrane.

The cause of the trouble could not be settled. The mare's surroundings were as nearly perfect as could be. She was fed well and had nothing to annoy her, as she had a stable to herself.

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WAS IT GLANDERS? IF SO, IS IT CURED?

BY R. A. STOUTLE, D.V.S., Barbados, West Indies.

As this case is peculiar, as well as interesting, I would like the opinion of some other veterinary surgeons on it. To render my paper explicit, I must refer to some extent to an outbreak of glanders which occurred in the same stable as my patient.

Some time ago, on September 18, 1889, eleven horses were landed here from New York, U.S. The morning following two of them were sold at an early hour. A few hours later I was called in to see two of the horses, which were supposed to be suffering from severe colds. On examining them I found both acutely glandered. I requested that they should be immediately destroyed. I examined all the others, but except slight elevation of temperature and a few peculiar looking lumps on off gluteal region in one horse I found nothing abnormal.

September 23d I was again called and found the one with the lumps on the hip with small abscesses in the place the lumps had been and the lymphatics corded and leading down

to the inner surface of thigh, in fact presenting well marked farcy; also found two others presenting similar symptoms. I also had those destroyed. On September 24th I was called to see one of those which had been disposed of. I found that glandered. Some six weeks later the other one which had been sold was destroyed by another veterinary surgeon. During the interval three horses had been sent to another island. You will find that that leaves one out of the eleven received; this one was kept alongside of the horse that I will call my patient.

On October 31st was called in to see these two horses. The first one, or the last of the eleven, I found a well marked case of glanders; the other presenting the following symptoms: respiration slightly hurried; temperature  $102^{\circ}$ ; right submaxillary gland enlarged, hard and not very painful; slight discharge from right nostril, which was rather gluey; mucous membrane of the nostrils bluish.

Having seen subcutaneous injections of *olii. tert.* recommended as an aid in the diagnosis of glanders and having tried the same with marked success in a number of cases, I decided to do so in this instance also. Mr. W. H. Thorpe, who is with me, proposed that we should use it in a large dose and see what effect that would have. We injected in the side of the neck 43 with the following result:

Two days later had temperature of  $105^{\circ}$ , the other submaxillary gland also enlarged, profuse discharge from both nostrils of a substance similar to albumen, but not quite as thick, spot surrounding injection enormously enlarged, parotid gland on same side also large. These conditions remained for a few days, when both submaxillary gland as well as parotid suppurated; I also opened the side of the neck. All of these I treated as simple abscesses. When they were healed the horse seemed in perfect health and has continued so up to date, March 11, 1890.

I am watching this case with great interest and shall report if any change occurs. I would also like some one else to try this in a well marked case of acute glanders and report result, as I intend doing so.

## EXTRACTS FROM FOREIGN JOURNALS.

SUPPLEMENTARY LOBES OF THE LIVER LODGED IN THE  
THORAX.

By MR. GUINARD.

Two cases of this kind were observed by the author, in bovines, the most interesting of which is the following: This steer had on the anterior face of the liver a true hepatic intrathoracic lobule, resting on the anterior face of the diaphragm, and surrounded by the lungs. It was held by a short peduncle, running through the diaphragm in the centre of the phrenic centre, and which established a proper communication between the accessory lobe and the organ itself. This peduncle was run through by biliary ducts and blood vessels. In structure, the supplementary lobe was exactly like liver tissue, and seemed to possess all the physiological properties of that organ. The opening of the diaphragm through which it hung in the chest was entirely closed, so that no communication existed between the two splanchnic sacs. In the second case the lobules were smaller, spherical and resembled small hepatic hernia, protruding on the anterior face of the diaphragm.—*Journal of Zootomie.*

## NOTES ON CASTRATION STANDING UP.

By MR. CADEAO.

The following observations were made by the author to test the value of this *modus operandi* and the possibility of complications. Five animals were operated upon in the mode generally followed by gelders or veterinarians who employ this process. One was castrated by the covered operation without complications; another by the uncovered operation, also without complications; a third had a champignon on the right side; the fourth also had an enormous champignon; the fifth had also the same complication on the left side. From these cases the author seems inclined to object to this mode of operation, and to prefer the safer mode of casting. It is proper to remark that in these five cases the castration was made with the clamps, instead of the torsion, as is done by the American operators.—*Journal of Zootechnie.*

## ENZOOTIC ABORTION IN COWS.

BY DR. G. SCHNEIDEMUHL.

While adopting the microbial theory of contagion in cases of abortion, the author considers it a serious error to admit the presence of a specific infectious agent in a cow shed as sufficient in all cases to give rise to abortion, and think that contributing causes, such as are liable to debilitate the animal and impair her power of resistance to the contagious influence, should also be taken into account. For this reason he advises a proper attention to preventive measures, such as a better regulated hygiene, a liberal and nutritive diet, and the interdiction of reproduction between members of the same family, or by bulls which have been kept on premises where cases of abortion have taken place, as well as with cows that have aborted.

When cases of abortion have taken place in barns, he recommends the frequent washing of the vulva, of the vagina and around the anus of the patient, together with the disinfection of the barn with a solution of phenic acid, with per cent. chloride of mercury, or of creoline, one to one thousand.

He also recommends the treatment of Nocard and of Brauer, and in general advises the following measures: the complete disinfection of places where cows have aborted; the subcutaneous injections of Brauer, at the flank of pregnant cows every two weeks, with from five to ten grammes of a two per cent. phenic solution; the exclusion, for breeding purposes, of cows that have aborted, or which have retained the foetal envelopes too long, or such as may have contracted uterine disease; the removal of the manure; cleanliness of the gutters of the barns; the removal of the cows from the premises until the disinfection is perfectly accomplished; and the isolation of cows which are near calving time.—*Thiermed. Vort.*

## SEPTICÆMIA IN A STEER.

BY FEUTZLING.

An eighteen months old steer was killed because of alarm-

ing symptoms of disease, and principally of an abundant diarrhœa.

The following lesions were found at the post-mortem: meat soft and without consistency, with an extremely disagreeable putrid smell, and infiltrated with serosity; intestines and stomach normal; spleen hypertrophied, of dark color and soft; liver pale and œdematous; lungs emphysematous. The condition of gaseous infiltration in the meat and the viscera showed itself a few hours after the slaughtering. A bacteriological examination of the spleen and of the blood disclosed large quantities of small mobile rods twice their width in length, and one-half the size of the bacillus of anthrax.

They were easily colored by the aniline preparation. Animals inoculated with the blood or the splenic pulp died in from twenty to thirty-six hours, and showed the same bacilli, principally in the blood. Cultivated on gelatine or potatoes, they form colonies of a grayish color, which do not liquefy gelatine, and which killed rabbits, mice and guinea pigs.

Shottelius classifies these bacilli among the septic microbes.—*Thierarzth. Milth.*

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#### RENAL CALCULI IN A COW.

BY LOSCH.

The author found in the left kidney of a cow; 1st, several hundreds of calculi varying in size from that of a small pea to that of a large nut, and weighing altogether four hundred and eighty-eight grammes, and 2d, a calcareous magma weighing seven hundred and eighty-eight grammes. These calculi were composed of carbonate of lime, phosphate of lime and magnesia. No uric or oxalic acid or cystine or cholesterine were present.—*Thierarzth Milth.*

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#### TREATMENT OF SCABIES IN SHEEP BY CREOLINE.

BY HOHENLEITNER.

From experiments made with a three per cent. solution of creoline, the following conclusions were formed:

1st. Baths are very efficacious when sheep have been sheared, and also after a thorough washing of the wool.

2d. A bath of one to one and a half minutes, followed by a scrubbing of three minutes, is sufficient. The wool on the skin must be well rubbed with the hands.

3d. Two baths, seven days apart, are sufficient.

4th. Solutions of creoline is perfectly harmless.

5th. After the bath, the wool takes a brown coloration, which soon disappears.

6th. The cost of the operation is trifling.—*Wochens f. Thierh.*

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#### ABSCESS OF THE SKIN AFTER TREATMENT WITH BROMIDE OF POTASSA.

BY SARD.

In treating a case of traumatic lockjaw, the author used bromide of potassa for three days, in large doses, exceeding two ounces a day, which was followed on the fifth day by a vesicular eruption on the skin. The vesicles ulcerated, and at the same time the four legs became largely swollen. After these manifestations the trismus and the symptoms of tetanus subsided and the animal recovered, although the trouble of the skin required a long time to heal.—*Repert. d. Thierh.*

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#### CARCINOMA OF THE BLADDER.

BY PROFESSOR FRIEDBERGER.

A mare twenty years old, without any apparent cause or external symptoms, passed reddish urine, containing clots of blood. On passing the finger in the urethra, a thickening of the mucous membrane was observed, and rectal examination revealed the pressure on the head of the bladder of a tumor about the size of a pigeon's egg. A diagnosis was made of hemorrhagic cystitis, due to the presence of a tumor. The animal died and the post mortem confirmed the diagnosis, the bladder containing several nodosities of various sizes, resembling the cerebral substance in structure. The lumbar ganglions were softened and hypertrophied, the heart was fatty, and the lungs œdematous.—*Wochenschr. f. Thierh.*



## INTRA-TRACHEAL INJECTIONS IN BRONCHITIS VERMINALIS.

BY KRIWONOGOW.

In an outbreak of this disease, where several forms of treatment had failed, intra-tracheal injections of eight grammes of the following solution relieved the calves that were yet diseased: Essence of clover and spirits of turpentine, of each 360 grammes, with thirty grammes each of phenic acid and olive oil. Two injections were sufficient to bring on improvement; after the fourth dead filaria were expectorated.—*Æsterr. Monat. f. Thierh.*

SEVERE ROARING DUE TO A LARGE SUB-PAROTID ABSCESS—  
TRACHEOTOMY—DEATH BY SEPTICÆMIA FIVE DAYS AFTER  
THE OPERATION.

BY M. BEYLOT.

Like many others in that location, this abscess had resisted the progress of maturation, and notwithstanding blistering and poulticing, the animal was threatened with suffocation. When the author was called to see the patient, she presented all the symptoms of the most violent dyspnœa, due to the presence in the left parotid region of an enormous abscess, in which the suppuration was still too deep to be detected. Seen first at night, and the exploration of so vascular a region being dangerous, a tracheotomy tube was improvised, the operation performed, and followed by immediate relief to the patient. The next day a better instrument was procured and put in place, and the animal being in much better condition, was allowed all the nourishment she was willing to take. On the second day fluctuation was detected and the abscess was opened with the actual cautery, a yellowish, thick, creamy pus escaping. The wound of the tracheotomy had a fœtid odor and there was a slight swelling of the left hind leg and careful antiseptic washing was recommended. Forty-eight hours after, the animal was relieved of the tube, the abscess discharging freely, the wound of the neck being still very offensive. The appetite was fair. The left side of the upper lip was the seat of a small swelling. During the evening the animal was

taken with colic and delirium, biting her bedding, and becoming dangerous to those who approached her. A semi-paralytic access followed, the left hind leg seeming powerless to support her, and soon after the pulse became imperceptible and extremities cold. The upper lip was largely swollen. Her miseries were ended by pithing. At the post mortem all the sphincters were found to be relaxed. The urine escaped by the vulva, and there was a diffused swelling of the body, and especially of the left hind leg. The subcutaneous tissues were infiltrated with yellow gelatinous serosities and a blackish ecchymosis. There were clotted deposits, through the muscles, so large in some that they were of a black coloration. The septum nasi were dark red, the lymphatic glands swollen. The blood of the jugular was dark and very liquid. The cartilaginous respiratory tract was congested. The wound of tracheotomy was gangrenous. The lungs on their surface were covered with black, round spots of various sizes, but there was no hepatization. Incisions through its substance caused the escape of dark incoagulable blood. The costal pleura contained petechiæ here and there. The pericardium contained abundant citrine liquid. The heart was pale, the ventricles containing large clots of yellow saffron color gelatinous in aspect and extending into the auricular. The spleen, liver and kidneys were anæmic, the small intestines congested and the cœcum and colon bloodless.—*Revue Veter.*

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## PASTEUR INSTITUTE OPENING IN NEW YORK.

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The opening of the Pasteur Institute in this city, for the preventive treatment of hydrophobia and the study of contagious diseases, took place on the 18th of February last. The institute was founded by Dr. Paul Gibier, of the Faculty of Paris, student and friend of Pasteur, and ex-adjunct to the Chair of Comparative Pathology at the Museum of Paris. The laboratories are kept at 178 West Tenth Street. A good delegation, comprising several prominent members of the French colony of New York, together with a fair representa-

tion of our American society, were present, and the metropolitan press as well as that of other cities took notes of the occasion.

The French Consul General, Viscount Paul d'Abzac, presented Dr. Gibier to the audience, and improved the occasion to enlighten them as to the scientific attainments of the doctor and of the various scientific missions with which he had been connected. "Ex-interne at the hospitals of Paris, his was the sad duty of making the autopsy of Gambetta; and he was on six different occasions appointed upon medical and other scientific commissions by the French Government." Dr. Gibier then introduced his collaborators: Prof. A. Liautard, as Consulting Veterinarian, and Dr. G. Van Schaick, one of the professors of the Post Graduate Medical School of New York.

The visitors were then conducted through the various rooms of the Institute, where Dr. Gibier entered upon explanations of his methods in the preparation of the virus of rabies and upon the preventive method of treatment in hydrophobic cases. Since the opening of the institute a number of persons have been subjected to the treatment, some of them coming from neighboring States and others from the far west.

Dr. Gibier and his assistants intend to demonstrate in the laboratories of the institute, not only the treatment of rabies, but also the nature of all contagious diseases, and especially of anthrax, tuberculosis and glanders, affections upon which they have carefully experimented for several years.

A brilliant success, no doubt, will be accomplished by this noble and beneficent enterprize.

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## COLLEGE NEWS.

### AMERICAN VETERINARY COLLEGE.

The spring session of the American Veterinary College for 1889-'90 closed on the 5th of April. Fifty-two students of the junior, and several members of the senior classes, who have entered upon a three years course, were present. At

the close of the course the class passed an examination on several branches of the curriculum of the junior year, and Mr. E. N. Stout, of Greensburg, Ind., having passed the best examination in anatomy, is to receive the silver medal prize offered by Dr. Liautard.

At the last meeting of the Board of Trustees of the American Veterinary College, on the recommendation of the Faculty, the following appointments were regularly made: Roscoe Bell, D.V.S., Professor of Materia Medica and Therapeutics; James E. Ryder, D.V.S., Professor of Obstetrics; E. F. Brush, M.D., Professor of Bovine Pathology; P. Gibier, M.D., Director of the Biological Laboratory.

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#### THE CHICAGO VETERINARY COLLEGE.

The commencement exercises of the Chicago Veterinary College occurred on March 20, 1890, at the Madison Street Theatre. The attendance was large.

The faculty of the college were present, consisting of A. H. Baker, V.S., Professor of Theory and Practice of Veterinary Medicine, Pathology of Horse, Ox, Sheep, Swine and Dog; R. J. Withers, M.D., V.S., Professor of Obstetrics; Joseph Hughes, M.R.C.V.S., Professor of Veterinary Anatomy, Special and Comparative; E. M. Reading, M.D., Professor of Physiology and Histology; Finley Ellingwood, M.D., Professor of Chemistry; J. F. Ryan, V.S., Professor of Lameness, Diseases of the Feet and Limbs, Practical and Pathological Shoeing; F. S. Billings, Professor of Micro-Histology and Gross Pathology; Percy Clark, M.D., Assistant Demonstrator of Practical Chemistry; Jonathan Periam, Professor of Hygiene, Breeding and General Management of Domestic Animals; C. E. Sayre, D.V.S., Professor of Dental Surgery and Helminthology; A. H. Baker, V.S., Professor of Principles and Practice of Veterinary Surgery; R. J. Withers, M.D., V.S., Professor of Materia Medica and Toxicology.

In the graduating class of fifty gentlemen, eighteen graduated in honor, of these: Dr. J. H. Houston had the highest honors; Dr. J. F. Roe secured the prize in Anatomy and also

in Materia Medica; Dr. T. A. Shipley obtained the prize in Pathology. The names and addresses of the gentlemen who were graduated are:

Walter Allen .....	Dunlap, Ill.
Fredrick W. Ashe.....	Brooklyn, N. Y.
Hugh Barnes.....	Brimfield, Ill.
Eugene F. Beckley.....	Rockford, Ill.
Major G. Benton.....	Coldwater, Mich.
Levi E. Booth.....	Corydon, Iowa.
John A. Brown.....	Streator, Ill.
Lorenzo D. Browne.....	Donovan, Ill.
Frank E. Burnham.....	Minneapolis, Minn.
Edwin A. Buxton.....	Stockbridge, Wis.
Fredrick J. Burley.....	Galveston, Texas.
Joel E. Cloud.....	Spiceland, Ind.
John W. Connaway.....	Columbia, Mo.
George L. Crocker.....	Maroa, Ill.
Douglas S. Defenbaugh.....	Streator, Ill.
Ira Dilley.....	Roseville, Ill.
Joseph Donovan.....	Marysville, Kan.
Charles T. Eckles.....	Eyota, Minn.
Harrison H. George.....	Napoleon, O.
Theodore T. Green.....	Walworth, Wis.
George G. Grundy.....	Morrisonville, Ill.
Thomas J. Gunning.....	Neponset, Ill.
Charles W. Heitzmann.....	Summi, Miss.
Isaac F. Houston.....	Bathgate, N. D.
John W. Kaull.....	Frankport, Dak.
Elmer H. Kinnett.....	Chapin, Ill.
John W. Lefever.....	Warsaw, Ind.
Willard D. Linn.....	Kings, Ill.
Owen J. McGurty.....	Charleston, Ill.
Christian A. Miller.....	Louisville, Ky.
Clarence Mills.....	Mt. Palatine, Ill.
John H. Miller.....	Malden, Ill.
George T. Netherton.....	Jameson, Mo.
James P. Norton.....	Norwalk, O.
Daniel O'Neill.....	Minneapolis, Minn.
James W. Parkinson.....	Wenona, Ill.
William C. Rayen.....	Nashville, Tenn.
John F. Roe.....	Wabash, Ind.
Joseph F. Roub.....	Monroe, Wis.
Fred. B. Rowan.....	Belvidere, Wis.
Francis S. Schoenleber.....	Chicago, Ill.
Arthur H. Schussler.....	Orland, Ill.
Milton Y. Shaffer.....	Carthage, Ind.

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Trajan A. Shipley.....	Ada, O.
Marcus W. Stark.....	East Lemon, Pa.
Francis E. Stone.....	Burlington, Wis.
Nathan I. Stringer.....	Fairbury, Ill.
John C. Tasche.....	Sheboygan, Wis.
William A. Waite.....	Racine, Wis.
Nathaniel P. Whitmore.....	Mazon, Ill.

The junior class of 1889 and 1890 was a large one, and as a rule the examinations for the first year's course were most satisfactory.

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## BIBLIOGRAPHY.

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A NEW MEDICAL DICTIONARY. By George N: Gould, A.B., M.D. (P. Blakiston, Son, & Co., Philadelphia, Pa.)

As medical science advances, and as new medical terms are introduced in scientific phraseology, the publication of such a work as the New Medical Dictionary of Dr. Gould becomes a necessity, and this new work will no doubt, therefore, find its way in all medical libraries. Including numerous new words and phrases, which have been created within the last ten years, especially in the study of bacteriology, ptomaines, leucomaines, electro-therapeutics, embryology and so on, it is claimed that two principal objects have been kept in view, viz., to make the dictionary both scientific and practical. A valuable feature of this work is found in the insertion of sundry tables, which add largely to its usefulness. Amongst these are: abbreviations used in medicine; one of the arteries, with the name, origin, distribution and branches; of the bacilli with their habits, characters, cultures, etc.; of the ganglia; of the leucomaines; of the micrococci; of the muscles; nerves; plexuses and ptomaines. The work concludes with several appendices, treating of the mineral springs of the United States, vital statistics, etc. It forms a neat volume of over five hundred pages, and both the busy practitioner and the medical student will find in it abundance of valuable information.

A PRACTICAL GUIDE TO MEAT INSPECTION. By Thomas Walley, M.R.C.V.S., Principal Edinburgh Royal Veterinary College, Professor of Veterinary Medicine and Surgery, etc., etc. (Young J. Pentland, Edinburgh and London.)

Prof. Walley is already well known to the veterinary profession through the various works he has before published, and principally for his excellent "Four Bovine Scourges." English reading veterinarians are again his debtors for a most valuable little book on the inspection of meat, a subject of primary interest to both the practitioner and sanitarian. Probably this is the first book on the subject in the English language. In the nearly two hundred pages that form this little volume, Prof. Walley has gathered points of the utmost importance, and laid before the investigator his opinions on many interesting matters, and though it may be claimed that "many of the statements must be regarded rather in the light of personal opinions," yet when these are propounded by such reliable authority, they are very nearly equivalent to "dogmatic assertions or to scientifically proved facts."

The various chapters of the book treat, first, of the importance of meat inspection; then, the substitution of the flesh of animals not generally used for human food for the flesh of those thus used; what flesh may be regarded as marketable, and what unmarketable; the rules to be observed in the inspection of meat; the examination of the carcass for the purpose of detecting abnormal conditions; the condition according to the mode of death, or in the various diseases; the constitutional, blood, parasitic, micro-parasitic, zymotic, eruptive affections; the condition of preserved and tinned meats; and with this an excellent and concise examination of the subject of ptomaines. Twenty-eight plates illustrate the work.

It is true that it is only a practical guide and has not the completeness that may be found in some of the works on the same subject, published on the continent, but it is for all purposes as complete a work as it could be made within the small compass which it occupies. English veterinarians will no doubt read with pleasure, and on this side of the Atlantic, where the services of veterinarians as meat inspectors are

still almost entirely ignored, we are sure that it will prove in the hands of our brethren one of the best means of educating themselves in the practical knowledge so essential to the proper performance of such duties, should our health officers ever be brought to realize their value at our hands and call for their performance.

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## SOCIETY MEETINGS.

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### LONG ISLAND VETERINARY SOCIETY.

A regular meeting of the Long Island Veterinary Society was held on the above date at No. 74 Adams Street, the President, Dr. Geo. H. Berns, in the chair.

The following members were present: Drs. Berns, R. R. Bell, Bowers, Housman, Decker, Newman, Breslin, Atchison, Pendry.

The minutes of the previous meeting were read and approved.

The Board of Censors made no report.

The Committee on Army Legislation, through its Chairman, Dr. Wm. H. Pendry, reported progress. Dr. Pendry also reported to the Society that a bill was introduced and passed in the Assembly of the State of New York, granting an additional year to non-graduates to register in this State, and it is now awaiting the action of the Senate. He thought the Society should take action upon the subject at once, and for that purpose he introduced the following resolution, which was adopted, viz.:

“That this Society has learned with dismay that an act amending the act regulating the practice of veterinary medicine and surgery, is now before the Legislature of this State, which amendment is for the purpose of granting a further extension of time in which non-graduates will be allowed to practice veterinary medicine, to the detriment of the profession who have qualified themselves in the interest of their profession and the public, and inasmuch as the present law was liberally framed for such non-graduates, and a period given in which they could register, and that time being twice extended by amendments to such act, this Society protests against a further amendment for such purpose as being unfair to the profession, and calculated to work an injury to the public health, as by endless amendments to said act all inducements to qualify for the all-important work of the veterinary profession are removed.”

The following committee of three was appointed by the Chair on State Legislation, namely, Drs. Wm. H. Pendry, R. R. Bell, Geo. F. Bowers.

This Committee was appointed with full power, and they shall guard as much as possible the interests of the graduates and the profession in this State, and particularly oppose the extension of time as now proposed for non-graduates to register. The next order of business being reading of papers, Dr. R. R. Bell read a very interesting paper entitled, “Examination of Horses for Soundness,” (published in this issue.)



The reading of the paper was followed by quite a discussion, after which a vote of thanks was unanimously tendered to the essayist.

It was moved by Dr. Bell and seconded by Dr. Bowers, that the Secretary have two typewritten copies of the proceedings of the Society made, and forward one each to the AMERICAN VETERINARY REVIEW and *Journal of Comparative Medicine*. Carried.

Moved by Dr. Bowers and seconded by Dr. Newman, that the Secretary order fifty reprints of the proceedings of the Society from the Editor of the AMERICAN VETERINARY REVIEW. Carried.

The Secretary reported that he had communicated with Dr. R. A. McLean as directed in regard to the return of Dr. R. R. Bell's paper on Azoturia, and had failed to receive a reply from the gentlemen up to the present time.

The Chair appointed as essayist for the May meeting, Dr. Samuel Atchison. The meeting then adjourned.

D. S. BRESLIN, D.V.S., *Secretary*.

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#### UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the United States Veterinary Medical Association, convening September 16, 1890, will be held in Chicago, Illinois. The committee of arrangements are Drs. Huidekoper, May and Hoskins.

##### BULLETIN No. 1.

The Secretary of the United States Veterinary Medical Association begs leave to announce that Prof. Rush Shippen Huidekoper, of Philadelphia, will read an article at the September, 1890 meeting, at Chicago, entitled: "Contraction and Expansion of the Foot, in Health and Disease."

This paper will be illustrated by models and diagrams.

W. HORACE HOSKINS,  
*Secretary*.

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#### NEWS AND SUNDRIES.

ETYMOLOGY OF THE WORD "VETERINARIAN." In his excellent work: *De Verborum Significatione*, of which but little is unfortunately known in its original form, Ferrerius Flaccus, who died in the year 14 A.D., embraces under the common denomination of *Bestia Veterina* all animals that work under the yoke, and makes this word a derivative of *veho* (I pull). According to this, the *veterinarius* was the man who attended to animals of draught of all kinds. Caton is of the same opinion. Opilius thinks that the word comes from the fact that the animal designated by *veterina animalis* carries its head secured to the belly (*ad ventrem onus religatum*) and that it ought to be called *venterina* and not *veterina*. Varron (116 A.D.) is

of the same opinion, including with *ceteaæ veterinær* all other animals of burden. The opinion of Columelle is yet the most plausible; he derives *veterinarius* from *vetus* (aged) because the oldest instructed the youngest men in the treatment of farm animals. He says: *Guarre veterinariæ medicinae prudens esse debet pecoris magister*. Hensinger finds the derivation of the word in the Sanscrit, an origin which is rather overdrawn.—*Monatssch. I. Ver. d. Thier*.

FAITH CURE IN VETERINARY PRACTICE.—A curious instance of the effects of the Christian Science craze occurred at Eau Claire recently. There is quite a large circle of students of the science in that city, and they hold regular meetings for the discussion of methods and cases. One of the number, a gentleman who resides just out of the city, had a sick horse on his hands. The veterinary surgeons could do nothing for the animal, and the local Christian Science experts failed also. Thereupon the owner of the horse, having plenty of time and not caring for the expense, went to the telegraph office and wired an account of the case to a Christian Science professor in Chicago. The symptoms were given in the telegram, and the Chicago expert was asked to treat the case by the usual method. The horse was at that time apparently on its last legs. The Chicago scientist wired back that he was treating the horse to the best of his ability and was thinking hard. Within five hours the horse was well and eating oats. The case was duly reported at the next meeting of the circle, and the members are pursuing their experiments with renewed faith in the science.

EQUINE LARYNGOSCOPY.—The *Medical Record* of New York is responsible for the following: Prof. Polansky and Dr. Schiaddelka of the Vienna Veterinary School, have constructed a laryngoscope for horses, by means of which active treatment in cases of glanders can be carried out.

A PRACTICE FOR SALE.—Dr. T. Fabian Mayor, of 309 Fulton St., Troy, New York, is about removing to Chicago and offers his practice for sale upon very favorable terms. It seems a good opening for a young graduate.

VETERINARY JOURNAL WANTED.—Dr. C. H. Peabody, of

Providence, offers ten dollars for the first volume of Fleming's Veterinary Journal, bound or unbound.

\$400 IN PRIZES—IMPORTANT TO BIOLOGICAL STUDENTS.

NORWAY LAKE, ME., January 17th, 1890.

*American Veterinary Review:*

I shall esteem it a great courtesy if you can make a brief news item of the offer of prizes, the circular of which I venture to inclose to you. Many veterinary surgeons have opportunities to make observations of the kind specified in this offer. The enterprise is in no sense a commercial one; I am simply anxious to collect all the facts touching failing nutrition and waning vital power in aged organisms.

Very truly yours

C. A. STEPHENS.

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From a desire to verify his own researches as to the causes of failing nutrition in aging organisms, the undersigned hereby offers three cash prizes of \$175, \$125 and \$100 for the best three comparative demonstrations, by means of microscopical slides, of the blood capillaries in young and in aged tissues, canine or human.

By young tissues (canine) are meant tissues from animals between the ages of one and three years.

By aged tissues (canine) are meant tissues from animals not less than twelve years of age.

By young tissues (human) are meant tissues from subjects between the ages of ten and twenty years.

By aged tissues (human) are meant tissues from subjects not less than sixty-five years of age.

While a preference will be given to demonstrations from human tissues, it will be possible for work in canine tissues to take the first and, indeed, all of the prizes. But of two slides equally well done in all respects, one canine, the other human, the latter will be given the preference. Canine tissues should be from large animals.

Twelve slides from young and twelve from aged tissues must be submitted by each competitor, together with a full description of the subject, methods pursued and every detail

and circumstance which is likely to throw light upon, or account for any peculiarity. The slides are for comparison as to the condition of capillary circulation, the young with the old, and should be in numbered pairs, or groups from the same kind of tissue. The term tissue is used in a general sense, e. g., pulmonary tissue, hepatic tissue, renal tissue, osseous tissue, muscular tissue, nerve tissue, alimentary tissue, etc.

No particular schedule of methods for injection, or staining, will be insisted upon, and no more definite directions, or explanations will be given.

The slides, carefully packed and boxed, together with descriptive manuscript, can be sent by mail.

It is stipulated that the demonstrations which receive the prizes shall become the property of the subscriber, for publication. All others will be returned, if desired.

No pseudonyms required. Accompany slides in every case, with (real) name and address. Unless of known reputation as a biologist, a reference is respectfully solicited.

Reservation: no award will be made unless work of at least ordinary merit is submitted.

This offer is made on the first day of January, 1890, and will remain open until the twentieth day of August, 1890.

Slides and manuscript will be examined and receipted for as soon as received.

The prizes will be adjudged on the first day of October, 1890.

These nominal prizes are offered less in expectation of result from the money as an agent, than in the hope that the offer may furnish a *point d'appui* for really needed work. Besides professional observers and students, there are in the United States a large number of amateur microscopists of acute vision and undoubted talent, who are at present playing with microscopes, as with toys, merely to see curious or pretty things. The time has come to concentrate observation upon the one proper object of biology, viz., the renovation and prolongation of human life. Address C. A. Stephens' Laboratory, Norway Lake, Maine.

# AMERICAN VETERINARY REVIEW,

JUNE, 1890.

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## EDITORIAL.

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“BE GENTLEMEN.”—National peculiarities in closing curriculums of medical and veterinary schools—Commencement exercises—their preparations—students take the burden of them—college officers reserve but one part—selection of the *orator*—this is the hardest of all—our opportunities to hear many of them—now a treat, often a disappointment—Prof. McEachran’s, of Montreal Veterinary College—its superiority and proper application—full of wisdom and very *apropos*—an excellent method of elevating the profession—admirable advice conveyed in few words—“Be gentlemen; live, talk and dress as such”—the part of the address as given to the graduates of the Department of Comparative Medicine of McGill University (Montreal Veterinary College).

“BE GENTLEMEN.”—The educational institutions of every nation have their peculiar methods of testifying their interest in the occurrence of the periodical events which form the waymarks of the student life of their matriculates, and especially when the point has been reached which marks the completion of their term of devotion to the scholastic curriculum which they have been employed in mastering. Thus, on this continent, as in some parts of Europe, the commencement exercises form events of the most anxious anticipation, the more particularly as the necessary preparations for the occasion must be completed at a time when lectures, hard studies, and the final rigid examinations are scarcely over.

These commencement ceremonies and the *eclat* of their brilliant performance become, therefore, an object of absorbing interest, and impose the necessity of much hard work on the part of the organizing and managing parties. There is

always so much remaining to be done at the end of a term, so many ends to keep up, so many contingencies to be provided for, and such unsuspected obstacles to be overcome. If it is not the printing of the invitations, then it may be the arrangement of the programme, or the selection of the music, or the details of the rehearsals, and so on and so on. Of course the work is portioned out among many, but in a majority of colleges the principal part of the labor falls upon the students, who, under the stimulus of excited anticipation, are willing to work like beavers until the instant when they shall mount the platform to receive their potential parchment, which converts them into wise men. They are rightly and fully resolved that nothing in the whole affair shall be less than first class, and in any event as good, if not a better conceived and executed performance than that of any preceding year.

There is, however, a part which the officers of the college may, and usually do reserve to themselves. This is the selection of the Orator (capital O) for the occasion.

At length both the day and the hour have come (the rising of the sun on that morning having been unaccountably unattended by any sensible perturbation,) and to the accompaniment of delicious and inspiring music, surrounded by their friends, and laden with fragrant and blushing bouquets, and proud of their valedictorian, who has accomplished his task admirably, indeed, just a little better than was expected of him, they prepare themselves to listen to *the* orator of the occasion. This, in our mind, is the moment of the evening, and on this feature of the programme very often rests the success of one of these fetes.

It has been a part of our professional and perfunctory experience and duty to listen to various addresses delivered to graduates, and many of these have contributed to our enjoyment of an hour of most agreeable and profitable occupation while they lasted. Again, however, we have sometimes been seriously disappointed in our expectations. But we have recently received a copy of an address which, in our estimation, is the most appropriate and well-conceived of any to which we have had the pleasure of listening, and was delivered by Prof.

McEachran before the graduates of the Veterinary Department of McGill University, Montreal. We reprint "from the *University Gazette*" that portion of the address which was directed principally to the graduates. The advice which is embodied in the words of our friend McEachran, and the good counsel contained in his suggestions, is such that not only young graduates in Montreal, but graduates in all parts of the world, and even older post-graduates, will do well to heed, and no one can be better qualified to impress his listeners with the wisdom of his remarks when he enjoins them "*In all things be gentlemen—live as gentlemen, talk as gentlemen, and dress as gentlemen.*" There are more ways than one to elevate a profession, and Professor McEachran has established an opening in the veterinary curriculum which veterinary schools of the day will do well to adopt and improve.

ADDRESS DELIVERED TO THE GRADUATES IN COMPARATIVE  
 MEDICINE AT MCGILL UNIVERSITY, BY DR. McEACHRAN,  
 DEAN OF THE FACULTY.

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Gentlemen,—You have now completed the curriculum prescribed for you, and have been admitted to the degree of Doctor of Veterinary Science. This you have gained after a hard course of study, and having passed most searching written and oral tests, by independent examiners appointed by the Government, as well as the examinations prescribed by the University.

Presumably, therefore, you are qualified to practice; I believe you to be so. Your examiners declare you so, this great University announces you so. Now, gentlemen, do not imagine this memorable day in your lives is to mark the end of your studies; by no means.

During your pupilage you have had but little time to familiarize yourselves with the literature of your profession other than your text-books. It will now be your duty to do so. To keep pace with the rapidly-evolving science of Medicine, you must be constant readers of scientific journals and new

publications, not alone those directly bearing on your own particular profession of science, but on all collateral subjects. There is no profession which requires in its members so varied a store of general knowledge as does yours.

In the daily walks of life you will come in contact with all classes of society, and all degrees of rank and station. You will be expected to have a general knowledge more or less extensive, and be expected to engage in intelligent conversation on almost every conceivable subject which happens to be of particular interest to each special client. Thus, the advanced farmer leads you into discussions on "Silos," on feeding standards, the relative merits of this or that breed of cattle, horses, sheep or swine. The sporting man imagines that you should know all winners and pedigrees of noted horses. The politician expects you to be thoroughly conversant with the bills before the House, and will be surprised if you admit that you do not wade through Hansard regularly.

It is your duty, therefore, to be a student of everything around you; be observant, and gather information from every source possible. Make it a habit, on every occasion when you are asked for information which you cannot impart from want of knowledge, note it down, and go to your library and inform yourselves of it for future use. So in your practice acquire a habit of noting cases, record every case of more than passing interest, and study the subject carefully, read every available standard author on it, and in the light of knowledge so obtained, applied to the case under observation, you will soon become masters of your profession.

Never miss an opportunity of making a post-mortem examination; nothing aids a man so much in making a correct diagnosis as the repeated corrections and errors disclosed by a post-mortem examination. Never waste a pathological specimen; think how much good others may gain who succeed you as students of comparative medicine, from even one specimen, accompanied by a carefully recorded history. Museum specimens, accompanied by histories, are of great service in illustrating didactic lectures.

In your practice acquire the habit of careful clinical inspec-



tion, and ever remember that your patients, though dumb, are in all things like as we are—they hear, see, feel, smell, taste, suffer pain, and enjoy pleasureable emotions just as we do. Deal with them in the full consciousness of these facts. Do not frighten them either by voice or look, never cause even the slightest pain that you can prevent, and never nauseate them by nauseous medical compounds such as you would consider barbarous in a doctor to prescribe for yourself.

In surgical operations, don't forget the sentient nerves which ramify every part of the body, employ every means in your power to lessen the suffering in necessary operations; too little use is made of the valuable discoveries applied to lessen human suffering; local and general anæsthetics.

In your fees be moderate—by no means undervalue your professional services—but be satisfied with fair, moderate charges.

Acquire prompt business habits, keep engagements punctually; nothing drives friends and clients away as quickly as inattention to engagements.

Collect your accounts regularly, pay your own debts promptly, and avoid debt as you would a quicksand.

Gentlemen, in going out into the great world, do not suppose that you will not have to meet with opposition and discouragements—for you shall; but meet them manfully; and let me assure you, that with your scientific attainments, and by unimpeachable conduct, by industry, sobriety, and fair dealing with all men, you need have no fear for the future.

The importance of your profession is daily becoming more and more understood; if you fail, blame not your profession, but blame yourselves, and never forget that, under no circumstances, can your profession disgrace you—but you may disgrace your profession.

Choose for your companions those only who are enlightened and refined; let your reading and your conversation always be elevating in character.

In all things be gentlemen; live as gentlemen, talk as gentlemen, and dress like gentlemen.

Much more might profitable be said on your duty to your-

selves, to your clients, to your profession, and to your Alma Mater, but time forbids.

In conclusion, therefore, gentlemen, on behalf of your teachers who, we trust, you will consider your lifelong friends, I say to you "God-speed;" we send you forth into a wide field of scientific usefulness, in which we trust some of you, at least, will become eminent and successful men, honored and respected by your fellows and confreres. We will watch your progress as fathers do their children, and never forget that we look to you, who are the first University graduates of this Faculty, to uphold the reputation of your Faculty, and this great University, of which it forms a minor part.

In the name of the Faculty, I beg to tender our thanks to the Provincial Government for their liberality in continuing to give us the annual grant, and to the Hon. Acting Commissioner of Agriculture, for taking the trouble to honor us with his presence to-day; to those gentlemen who constitute the Board of Examiners, who have traveled long distances in order to assist us, and to this great assembly, for your patience in listening to these remarks.

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## ORIGINAL ARTICLES.

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### THE INSPECTION OF MEAT AND MILK WITH SPECIAL REFERENCE TO TUBERCULOSIS.\*

BY A. W. CLEMENT, V.S., OF BALTIMORE.

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*(Continued from page 86.)*

At the meeting of the International Veterinary Congress held at Paris in September, 1889, under the presidency of M. Chauveau, after thorough discussion of the question of meat inspection, the following conclusions were reached.

"1.—The consumption by men and animals of meat from tuberculous animals should be prohibited, whatever may be the extent of the tuberculosis, and whatever may be the apparent quality of the meat.

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\*Read at a special meeting of the Maryland State Veterinary Medical Society, January 23, 1890.

“2.—The proprietor should be indemnified if the animals seized are cattle or hogs.

“3.—It should be possible to place meat for sale only after it has been recommended as healthy by a veterinary inspection service.

“4.—The suppression of private slaughter houses is recommended, and their replacement by public abattoirs.

“5.—The veterinary inspection of the animals intended for slaughter should be made before and after death.

“6.—It is not necessary that a municipal decree should designate the causes which should influence the seizure of the meat.

“7.—The introduction of foreign meats into the community without a previous practical examination by the veterinary inspector, or under his control, should not be allowed.

“8.—All meats should be stamped before leaving the abattoir, including those which are destined for the soldiers.”

At the twenty-sixth annual meeting of the United States Veterinary Medical Association, held at Brooklyn, N. Y., September 17th, 1889, the following resolutions were unanimously passed:

“*Whereas*, We, the members of the United States Veterinary Medical Association, being sensible of the prevalence of bovine tuberculosis in the United States, particularly in the dairy stock of the Eastern States, it being computed that at least 10 to 15 per cent. are so affected in one form or another, and being satisfied of its infectious and contagious character and of its identity with tuberculosis, or consumption in the human family, and that it can be conveyed to others both by inoculation and ingestion, believing that a large percentage of this disease in mankind can be traced to this source;

“*Resolved*, That we strongly condemn the use of the milk or flesh of animals so affected in any form, as an article of diet.

“2.—*Resolved*, That this Association urgently protests against the employment of empirics as meat or dairy inspectors; that such duties should be confined to duly qualified veterinarians having a comprehensive knowledge of comparative pathology.

“3.—*Resolved*, That the inspection of meat can be properly conducted only at the abattoirs.

“4.—*Resolved*, That all dairies should be periodically visited, the cows carefully examined and their condition reported upon to the local authorities.

“5.—*Resolved*, That a committee of three be appointed by the Chair to place these resolutions before the Secretary of Agriculture, so that national measures may be adopted by which this disease can be placed under the same category as contagious pleuro-pneumonia, and to be similiarly dealt with.”

Now, it is probable that no such complete system of inspection as is carried out in some European cities can be inaugurated in this country, at least at the present time. Nevertheless, some parts and modifications of that system should be adopted. If the meat supply is to be controlled, however, the inspection must be made before and after death, and the killing must be witnessed, to determine the existence or absence of disease. It is impossible to tell by simply looking at a piece of meat whether it is healthy or diseased. Or at any rate this could not be done without such time and appliances as would render the inspection impracticable. When we see professional men, and men of prominence too, go into court and swear that a certain piece of meat is unfit for food; and as many more of equal prominence swear in the opposite direction, as was the case reported a short time since in Scotland, we feel that considerable responsibility rests upon the expert, who wishes to do his duty to the public, and who does not desire to bring reproach upon his profession. Of course there are certain cases in which a piece of meat can be pronounced unfit for human food, as for instance, where tuberculous nodules are present, or in certain parasitic diseases, such as the larval state of the human tapeworm.

To make inspection anything like a guarantee of safety and to do this at a reasonable expense to the community, centralization of the slaughtering is absolutely necessary. Any other method of killing is a disgrace to the city. Many of our slaughter-houses are in as unsanitary a condition as they can well be. If the city of Baltimore would compel the butchers

to kill at some central abattoir, or at most in two abattoirs, half the difficulty of inspection would be overcome.

Tuberculosis is not by any means the only disease which may be transmitted to the human family through the meat supply. Lack of time, however, prevents me from more than touching upon some of them. Actinomycosis, a tumor-like affection found upon the jaws of cattle and sometimes in the throat, lungs and tissues, often met with in the muscles of hogs on microscopic examination, is seen also occasionally in man. The infectious nature of this disease has been proven, as well as its identity in men and animals.

Trichinosis is a parasitic disease more or less common in pigs, where the worm, of microscopic dimensions, is found curled up in the muscle. If not thoroughly cooked, the pork which contains trichinæ is liable to affect the person who eats it.

Tapeworm, a very common disease, can only be produced by the ingestion of partially cooked beef and pork, which harbors it in its immature form. Of 1,037 hogs examined in Montreal by Dr. Osler and myself, 76 were infested with the cysticercus cellulosæ, or immature form of the tænia solium, one of the most common tapeworms found in man. Circulars sent at this time to the physicians of the city revealed the fact that at that time no less than 200 persons were suffering from this disease.

Whatever may be the difference of opinion as to the probability of infection by the meat supply, no such difference of opinion exists as to the milk supply. Tubercle bacilli have been demonstrated in the milk from tuberculous cows, even when there were no lesions in the udder. Such milk is no doubt to blame for much of the tuberculosis seen in young children. Many diseases in children other than tuberculosis are oftentimes referable to milk. To control the milk supply, the cows from which it comes must be under some sort of supervision. Just how to do it with the best guarantee of safety, and with the least expense, is a matter to be determined upon. Perhaps some such system as the licensing of the dairies would solve the matter. Whatever may be determined upon, it is certain that this question must sooner or later demand the considerate attention of the public.

From the fact that the public is so much dependent upon the health of the animals which supply it with food and milk, for its comfort and well-being, should not the veterinary profession be accorded representation in both the city and State Boards of Health?

Much that pertains to the proper sanitary inspection of milk and of meat requires the special knowledge and training of the veterinarian. This is recognized in those European cities which possess the most enlightened and efficient Boards of Health. If those in authority, and the public generally, will inform themselves thoroughly concerning the sources of danger to public health, some of which have been pointed out in this paper, they cannot fail to be convinced of the necessity of taking suitable action to guard against these dangers.

#### DISCUSSION.

Dr. Wm. H. Welch said that the demonstration that tuberculosis is an infectious disease produced by a specific micro-organism which has been isolated in pure culture justifies us in ranking this disease, at least theoretically, among the preventable diseases. We may indeed be appalled in instituting preventive measures at the apparent hopelessness of our efforts in view of the enormous prevalence of tuberculosis in man and animals, and in view of the wide distribution and great vital resistance of the tubercle bacillus. Nevertheless, these difficulties should not prevent us from adopting all available means to check the spread of the most devastating of human maladies.

The most common, although not the sole, sources of tuberculous infection appear to be the dust from dried tuberculous sputum and the milk from tuberculous cows. Doubtless, at least for adults, the danger is greater from tuberculous sputum than from milk. Since however, it has been abundantly demonstrated that the milk of tuberculous cows, even when the udder is free from gross lesions, is capable of conveying tuberculous infection in not a small proportion of cases we must regard the milk of tuberculous cows as dangerous and to be rejected for food.

We have not equally satisfactory proof as to the conveyance of tuberculosis by the flesh of tuberculous cattle. On the one hand, as regards the flesh, there are only a few positive experimental results against a large number of negative ones, and even in the positive cases there is not sufficient evidence that the possibility of accidental contamination of the flesh has been avoided, and on the other hand, we know that muscular tissue is not a favorable soil for the development of tubercle bacilli. The question as to the use of meat from cattle affected with localized tuberculosis is one of great economic importance. The positive statements of veterinary and tuberculosis congresses as to the rejection of the flesh of tuberculous cattle and the views expressed in popular and alarmist articles on this point are not at present warranted by our knowledge of the facts. Nevertheless, we have a right to consider the possibility of accidental contamination of the meat in the process of slaughtering tuberculous animals, and also the natural repugnance against the consumption of the flesh of diseased animals. It is better to wait for further investigation before taking a decided position on this question. This does not, however, lessen the importance of proper sanitary inspection of slaughtered animals, for there are many diseases besides tuberculosis that can be conveyed by the use of diseased meat.

There should be no differences of opinion as to the desirability of the measures of inspection of food advocated by Dr. Clement. Public health demands that such sanitary inspection be adopted. It is clear that no efficient inspection of the meat supply can be secured until the law forbids the slaughtering of cattle, swine and sheep in a multitude of private establishments. It is absolutely essential that the reform should begin with the establishment of one or two abattoirs where alone it is permitted to slaughter the animals named. This measure, like many others for the public good, is inimical to certain private interests, and here lies the only opposition to it. As soon as the public is sufficiently informed as to the good which will be accomplished by the sanitary inspection of the meat supply, it is certain that these private interests will not

prevail and that this community will adopt the only policy which can commend itself to an enlightened people.

Dr. Wm. T. Councilman, of Johns Hopkins Hospital, said that the anatomical study of the tuberculous lesions throws much light on the manner in which infection takes place. While there is no doubt that in the great majority of cases the sputum is the source of infection by the inhalation of the tubercle bacilli, set free by drying, the first source of the disease being then found in the lungs, there are many cases in which the infection comes from the alimentary canal. Though in such cases infection by sputum cannot be excluded, for the bacilli from it may get on food or other objects which are placed in the mouth, we know that we have in tuberculous milk and probably in flesh a much readier source of infection. We are so accustomed to regard tuberculosis as a disease of the lungs that we lose sight of the great number of other than lung lesions which are produced by the bacilli. Almost all chronic enlargements of glands, the chronic joint diseases, etc., are tuberculous, and for most of these, infection takes place through the alimentary canal.

All inspection of meat, dairy cattle, etc., should be made by an expert who has had a long experience in studying the comparative pathology of the disease. For, although the disease is the same in man and animals, and the lesions produced by it agree in their general features, the characteristics of the tissues and the manner of infection and spread of the disease in the different animals, produce such apparent differences in the lesions that they might readily be mistaken by one not an expert in such matters. Such an inspection of meat as Dr. Clement has pointed out would not be possible except with the abattoir system. While there is every reason, both sanitary and economic, that we should have such an inspection of meat and milk, there is no ground on which it can be opposed.

We are so accustomed to tuberculosis, it is so much with us that we have come to accept it as a matter of fate and do not lift our hands in an attempt to mitigate its ravages. While it would, no doubt, be impossible to exclude all the sources of infection, still, many of them can be.



Dr. James A. Steuart, City Health Commissioner, said the subject has been so thoroughly exhausted by the very able and instructive paper read by Dr. A. W. Clement, as well as by the clear and logical views presented by Professors Welch and Councilman, that there is nothing left for me to say in this connection, except that I have been both pleased and interested, and that my views on this subject are in thorough accord with those expressed here to-night.

I feel called upon, however, to say briefly, as Health Commissioner of Baltimore, that I have for the past ten years, in season and out of season, advocated and urged the passage of a law creating Inspectors of Food, especially of meat and milk, by the State or the city of Baltimore. It goes without saying that none should be thought of for a moment, for such a position, but one thoroughly qualified and equipped for the difficult duties of such an office, by all the necessary technical knowledge and experience essential for the efficient performance of the work. In regard to the establishment of an abattoir for the city of Baltimore, I have struggled in vain for the past fifteen years. Long since I became convinced that private slaughter houses could *not* be properly regulated by city ordinances, and in fact were from the very nature of things an unmitigated nuisance, no matter where situated, within the city limits or upon the suburbs.

I have labored to convince the butcher that his best interests would be subserved through the abattoir, but all in vain up to the present time. I do not despair, however, and shall continue my efforts in this direction in spite of all opposition.

The importance to the community of wholesome food, as well as the abatement of the private slaughter house nuisance, are too great to be outweighed by opposing difficulties. I shall be glad to co-operate with the committee you propose to appoint, and charged with the difficult task of proposing a law to be presented to the Legislature, together with an appeal for its enactment.

Mr. T. Wallis Blackistone, who had been invited to be present for the purpose of discussing the subject from a legal standpoint, said that while legislation had provided for the

establishment of no less than three sanitary boards, to wit: the State Board of Health, of which Dr. C. W. Chancellor is the Secretary and executive officer; the Baltimore City Health Department, of which Dr. James A. Steuart is the head; and the State Live Stock Sanitary Board, consisting of three Commissioners, "who are practically engaged in the breeding of live stock," with Dr. William H. Wray as Chief Veterinary Inspector, it is apparent from an examination of the various Acts of Assembly and ordinances of the Mayor and City Council, from which these boards derive their powers, that our laws are at present wholly inadequate to protect us from the dangers so vividly pointed out by Dr. Clement. And this, although the powers conferred and the discretion given to their officers are, in some matters, so broad as to be almost arbitrary.

The City Health Commissioner may "fence in and guard by sentinels" any infected house or district in the city of Baltimore; he may quarantine individuals, houses or localities; he may destroy household effects, or cause them to be disinfected; and he may abate nuisances—with very wide discretion as to what constitutes a nuisance—and for this purpose may invoke the aid of the courts. He may cause the water of any suspected pump or spring to be analyzed and, if found impure, prohibit its use.

Kindred powers and like obligations are conferred upon the State Board of Health, to be exercised and performed all over the State.

The Live Stock Sanitary Board is charged with the duty of protecting the health of domestic animals from "exotic, contagious or infectious diseases," and to this end may quarantine or cause infected animals to be destroyed.

It will be seen from this brief statement of the law, that the efforts of the Legislature have been directed mainly, so far as the functions of these boards are concerned, to the prevention of the spread of disease by contact or communication with diseased subjects.

It would seem that our law-givers never had in contemplation the possibility or the danger of the communication of

disease to the human family by infected meat or milk used for food. Certain it is, that they have nowhere provided such a supervision over our food supplies, as in the instances of these two most important items, can only be made effective by a systematic inspection, conducted by skillful and scientific men, whose professional education and experience has fitted them for this particular work. To be sure, under the head of "Markets," in the City Code, there are two sections, imposing fines of twenty dollars, respectively, for selling unsound meat or milk from diseased cows. The enforcement of this, like the other provisions of the law relating to the markets, is left with the clerk of the market. How far the scientific and professional attainments of that officer enable him to detect and prevent the sale of the meat or milk of an animal with tuberculosis, I leave others to determine.

I have only to add that I think the suggestions made by Dr. Clement would provide an adequate remedy for the evils under discussion. One, if not both, of the Boards of Health should include a competent veterinarian, whose duties should be especially directed to the inspection of our meat and milk food supplies. The inspection of meat should be made before and after death, and to enable this to be done, the places for the slaughtering of animals for food should be reduced to as few as possible, by the establishment of one or more abattoirs.

Dr. George C. Faville, V. S., then said:—Mr. President, the importance of this question can scarcely be overestimated. The fearful ravages of tuberculosis in the human family is known to all. In our work of inspection in the Bureau of Animal Industry we keep a pretty careful record of the inspection of cows in searching for contagious pleuro-pneumonia.

I find from our records that of 163 stables supplying milk to this city, containing 2,160 cows, that over 10 per cent. of them show well-marked evidence of tuberculosis. I wish to introduce the following resolutions for the consideration of this meeting:

*Whereas*, It has been proven that the unboiled milk of tuberculous cows, whether or not the udder is tuberculous, is

capable of causing tuberculous infection in individuals consuming the milk;

*Whereas*, There is reason to believe that the consumption of uncooked or partly cooked meat from tuberculous cattle is likewise capable in some instances of causing tuberculosis;

*Whereas*, The number of tuberculous cows is large, probably in this community not less than 10 per cent. of the entire number, and in many herds much higher;

*Whereas*, There are various other affections of animals communicable to man, such as trichinosis, actinomycosis, tapeworm, etc.;

*Whereas*, There are various recognized abuses sometimes connected with the milk sold,

*Resolved*, In view of the manifest dangers from these sources to the consumers of meat and milk, that some suitable inspection of the meat and milk should be adopted.

*Resolved*, That a proper inspection of the meat involves one, or at the most two central slaughtering houses where alone it is permitted to slaughter cattle, swine and sheep to be sold for food,—a provision recognized as essential by all competent authorities, and already adopted in most large European cities.

*Resolved*, That a proper control of the milk supply of the city involves a periodical inspection of the cows in the dairies furnishing the milk.

*Resolved*, That the State and City Boards of Health, in order to carry out proper systems of inspection of meat and milk supplied for food, should avail themselves of the special knowledge and training of the veterinarian, and

*Resolved*, That a copy of these resolutions be sent to each branch of the Legislature of the State and to the Mayor and City Council of Baltimore.

At the conclusion of these remarks, Drs. Wm. H. Welch and James A. Steuart were added to the present Committee on Legislation, which consists of Drs. Geo. C. Faville, A. W. Clement and Wm. Dougherty.

## MILK FROM TUBERCULOUS COWS.

HOW FAR MAY A COW BE TUBERCULOUS BEFORE HER MILK BECOMES DANGEROUS AS AN ARTICLE OF FOOD?\*

By HAROLD C. ERNST, A.M., M.D., of Boston.

The change of opinion in regard to the infectious nature of tuberculosis has been very marked in the last few years, not among the scientists, but among the people at large. Of course the medical world has, as a rule, accepted the conclusions to be drawn from Villemin's work of twenty-five years ago, and the discovery of the specific cause of the disease by Koch has only added strength to the theories advanced in certain quarters before that time.

The change of opinion spoken of is, after all, hardly a change, but, more properly, an acceptance of the knowledge gained in regard to the disease by the more recent and exact methods of research, and a much wider diffusion of that knowledge. More and more is it the rule that the knowledge of the transmissibility of tuberculosis by means of infected material is recognized among those whom it concerns the most, and nothing but good can come from the diffusion of that knowledge.

It is hardly too much to say that proper methods of management of tuberculosis, both in human beings and in animals, involve more important interests—pecuniary as well as vital—than any other subject that engages the attention of medical men. It is well known that one-seventh of the human race, approximately, perish from this disease, and when we acknowledge to ourselves, as a fair review of the evidence at hand must force us to do, that most, if not all, of this loss is preventable, our duty is plain before us. That is, never to cease speaking of it, never to give up trying to reconcile the money interests of man with his own welfare, and to do all in our power, by the collection of clinical and experimental evidence, to make the case complete.

The work showing the etiological relationship of the bacil-

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\* From the Hatch Experiment Station, Bulletin No. 8.

lus of tuberculosis to the disease was, to all intents and purposes, complete upon the publication of Koch's monograph upon the subject. Nothing more in the way of proof was actually needed, and, indeed, very little has been furnished. At the same time, confirmatory evidence was demanded by some who had, and many who had not, access to the original details, and this confirmatory evidence has been furnished in such overwhelming amount, that it is to-day but a waste of time to repeat, what is accepted the scientific world over, that in the organism described by Koch we have the specific cause of this pathological change, and that without its activity we do not have tuberculosis in any form or under any conditions.

An imperfect understanding of the nature of bacteria in general, and of this organism in particular, has led to many attempts to arrest the pulmonary form of the disease it produces, by therapeutic measures, most of which would have been seen to be useless at the outset, if a knowledge of the problem had been complete. It is not upon drugs or mechanical means that our reliance should be placed in attempting to stamp out this scourge of civilized man. Our attention must be turned in the direction of proper preventive measures, and until the necessity for this is impressed upon physicians in general, and by them upon the people at large, so that the preventive measures suggested after mature deliberation will be complied with, but little can be effected, and the knowledge gathered after so much hard labor must be considered as wasted, for the time being.

In order to the suggestions upon which the stamping out of tuberculosis must depend, there is necessary a large amount of investigation into the methods by which it spreads and by which the virus is carried from person to person. Among these methods are undoubtedly the excreta—more especially the sputum—from persons affected with the disease; the excreta are carelessly treated and scattered broadcast, to the injury of persons susceptible but not previously affected. The methods of distribution in this way, and the behavior of the bacillus of tuberculosis outside of the body, have been well and recently treated by Cornet (*Zeit. f. Hyg.*, Bd. v. S. 191, 1888).

Other methods of distribution are of importance, however, and until within a few years have not received attention from the medical profession at all commensurate with their value. These methods of infection are those arising from the ingestion of food materials coming from the domestic animals, especially the flesh and milk of cattle.

In Koch's *Etiology of Tuberculosis* he uses the following expressions :

“Since by far the greatest number of cases of tuberculosis begin in the lungs, it is to be supposed that the infection in all these cases has taken place in the manner just suggested—by the inhalation of phthisic sputum dried and made into dust. The second principal source for the tubercle-bacilli, viz., tuberculosis of the domestic animals, appears not to have anything like the importance of the phthisic sputum. The animals, as is well known, produce no sputum, so that during their life no tubercle-bacilli get from them into the outer world by means of the respiratory passages. Also in the excrement of tuberculous animals the bacilli appear to be only exceptionally present. On the contrary, it is a fact that the milk of tuberculous animals can cause infection.

“With the exception of this one way, therefore (*i. e.*, through milk) the tuberculous virus can only have effect after the death of the animal, and can only cause infection by the eating of the meat. The same conditions hold for the milk of cows suffering from ‘perlsucht.’ Before all things, if infection is to take place, it is necessary that the milk contain tubercle-bacilli; but this appears to be the case only when the milk-glands themselves are affected with the disease. This explains at once the contradictions in the statements of various authors, who have made feeding experiments with the milk of cows suffering from ‘perlsucht.’ If infection from tuberculous animals does not appear to be frequent, it must by no means be underrated.”

This caution is one which was necessary at the time it was written, and its repetition is as necessary now as ever. What conclusions may be reached in regard to its *extreme* importance, are well shown by the statistics collected and presented

by Dr. Brush before the New York Academy of Medicine, on April 29, 1889 (*Boston Med. and Surg. Journal*, CXX. p. 467 *et seq.*). In this paper the author states that after several years of close study of the affection, including a consideration of all accessible statistics, and the habits of the people among whom it prevails, he has arrived at the conclusion that the only constantly associated factor is found in the in-bred bovine species. If a community was closely connected with in-bred dairy cattle, tuberculosis prevailed, and, *vice versa*, if there were no in-bred dairy cattle there was no tuberculosis. In the discussion following this paper many objections were raised. Dr. Brush went on to say that he believed that the disease was originally derived from the bovine species. He did not believe that less than fifty per cent. of all dairy cattle were affected by it, while the statistics he had quoted showed that wherever there was a race of people without cattle phthisis was unknown. He believed, furthermore, that if all the cattle in this country were to be killed, the disease would finally die out entirely here.

Such statements as these are a revelation to the generality of practitioners, and may seem to be somewhat forced, but they certainly indicate, together with the statistics upon which they are based, the existence of a greater danger than has been fairly realized. That the danger from the consumption of milk coming from cows affected with tuberculosis has been understood by individuals at least, and that, too, before the announcement of Koch's discovery, is very well shown by extracts from a letter which I take the liberty of quoting here. The gentleman writing it is a veterinarian in practice in Providence, R. I., and the observations were made and the advice given more than ten years ago. That portion of his letter bearing upon the subject in hand is as follows:

"Mr. W., June 15, 1878, called me to see a white and red cow. Coughs and is short of breath and wheezes. Pulse 60; respiration 14, and heavy at the flanks; temperature 104°. Diminished resonance of right lung, but increased in part of the same. Emphysematous crackling over left lung and dullness on percussion. Diagnosed a case of tuberculosis and advised the destruction of the animal.



“Dec. 12. Cow in a cold rain a few days ago for about two hours. Milk still more diminished than at a visit made on September 25. Again advised the destruction of the cow. Family still using the milk. Respiration 20; pulse 85; temperature 104.6°.

“February 22, 1879. Temperature 104.8°; respiration 26; pulse 68. Losing flesh fast. Milk still in small quantities. Advised, as before, to destroy the animal and *not to use milk*.

“May 30. Called in a hurry to see cow. Is now as poor as could be. No milk for a week. Pulse 80; respiration 40; temperature 106°. The cow died in about three hours. Autopsy made fourteen hours after death: Lungs infiltrated with tuberculous deposit. Weight of thoracic viscera 43.5 pounds. Tuberculous deposits found in the mediastinum, in the muscular tissues, and in the mesentery, spleen, kidneys, udder, intestines, pleura, and one deposit on the tongue. The inside of the trachea was covered with small tubercles.

“In August, 1879, the baby was taken sick, and died in about seven weeks. On post-mortem of the child there was found meningeal tuberculosis—deposits all over the coverings of the brain and some in the lung.

“In 1881 a child, about three years old, died with, as it was called, tuberculous bronchitis. And in 1886, a boy, nine years old, who for three or four years had been delicate, died with consumption—‘quick,’ as it was called.

“So far as known, the family on both sides have never before had any trouble of the kind, and the parents were both rugged and healthy people, and so were the grandparents—one now being alive and sixty-eight years old, and the other died at seventy-eight.”

Of course there is much room for criticism, if these cases be quoted as carrying out an exact clinical experiment, and no one can say that the occurrence of the three deaths in the same family was anything more than a coincidence. At the same time it must be acknowledged that they offer very solid suggestions for consideration, and that the light thrown upon the disease by the investigations of recent years makes the ad-

vice of the veterinarian to "kill the cow and stop using the milk" much more sound than it appeared to the minds of the medical gentlemen who "laughed" at him at the time it was given.

It is my hope within the coming year to collect a series of clinical observations which will be of interest and some service in elucidating the question of how many cases of tuberculosis occur which produce suspicion in the minds of medical or veterinary attendants of having an origin in the milk from infectious cows.

It is upon this question of possible danger from the domestic animals—especially cattle—that much recent work has been done, but the subject has been by no means exhausted.

If there is danger to human beings from the widespread existence of tuberculosis among cattle, some sort of restrictive measures must be taken, by means of which this danger can be lessened. At the same time legislation calling for so much pecuniary loss as would be the case if the present supply of tuberculous cattle were to be destroyed, can only be asked for with a backing of as much carefully gathered scientific evidence as can be obtained, and it is the part of preventive medicine and the experimental method to furnish some of this evidence.

Through the liberality and broad-mindedness of an association of gentlemen in Boston, it is possible to present the results of certain experiments undertaken to determine the question which is expressed in the title of this paper. "How far may a cow be tuberculous before her milk becomes dangerous as an article of food?" is an extremely important point to decide. If it be considered already settled and Koch's dictum be accepted, that there is no danger in the milk, if the mammary glands be not affected, then there remains only for the veterinary surgeon to determine the existence of such lesions, and restrictive measures can go no further. If, however, the milk from cows with no visible lesion of the lacteal tract be shown to contain the specific virus of the disease in a not inconsiderable number of cases, and if this milk be shown to possess the power of producing the tuberculous process

upon inoculation in small quantities and in feeding experiments carried out with every possible precaution, then restrictive measures must have a far wider scope, and be carried on from an entirely different standpoint than has heretofore been considered necessary.

It is familiar to most of us that little importance has been attached to this question—the danger of milk from tuberculous cows with no lesions of the udder—for the reason that many experiments have been made with negative results, and because *a priori* reasoning would seem to indicate the absence of such danger; because tuberculosis is not a disease like anthrax, in which the specific poison is to be found in all parts of the system and is carried from one place to another by the blood-stream. Koch's assertion that the milk from cows affected with tuberculosis is dangerous only when the udder is involved, appears to be based upon theoretical considerations rather than practical work in this special direction. It has been widely accepted, however, and the weight of his name has caused the assertion to be repeated many times with but few attempts to verify its correctness.

The increased attention that has been paid to the disease among cattle, and the suspicions that have been aroused that tuberculosis among the domestic animals is a more frequent cause of its appearance among men than has been supposed, have made a careful investigation of this point imperatively necessary. With the exception of a few successful experiments by Bollinger (*Deutsch. Zeit. f. Thiermed.*, Bd. XIV. S. 264) and Bang (*Ibid.*, Bd. 11, S. 45, 1885), no evidence of great value is to be adduced. These authors, as well as Tschokke (quoted by Bollinger), bring out isolated cases showing successful inoculation experiments with the milk from tuberculous cows with no disease of the udders, but the experiments are so few in number that they cannot be accepted as furnishing more than a probability, and extremely critical persons might be justified in ascribing the results to contamination.

Bang (*Congres pour l'etude de la Tuberculose*, 1, p. 70, 1888) gives new results. Examining twenty-one cases of cows affected with general tuberculosis but with no signs of disease

in the udder, he found but two whose milk showed virulent qualities upon inoculation in rabbits. He concludes that since the cows experimented with were in advanced stages of the disease and yet showed such slight virulent properties in their milk, the danger from cows in less advanced stages is much less. And this conclusion he thinks is borne out by experiments with milk drawn from eight women affected with tuberculosis; specimens were used from all for inoculation and none were found to be virulent. He draws the conclusion, therefore, that it is not necessary to consider all milk dangerous coming from tuberculous cows, but that it should always be *suspected*, because no one can say when the udder will be diseased, and because, without this, the milk from tuberculous cows contains the virus in rare cases.

I shall endeavor to show that it is not at all rare for such milk to contain the virus.

Galtier also (*loc. cit.*, p. 81) has given the result of certain experiments with milk coming from tuberculous cows, but he says that "certain experimenters claim to have established the virulence of milk coming from animals whose udders appeared to be normal and free from any lesions; the greater number, and I am one of them, have merely encountered a virulence in milk after the udder had become tuberculous. However, as a beginning tuberculosis of the udder is an extremely difficult thing to recognize, especially during the life of the animal, the milk should be considered dangerous which comes from any animal affected, or suspected of being affected, with tuberculosis."

I shall endeavor to show that this view of the case is justified by something more than probabilities.

In the *Deutsch. Arch. fur klin. Med.*, Bd. xliv. S. 500, Hirschberger reports the results of an experimental research upon the infectiousness of the milk of tuberculous cows, in which—following out Bollinger's work—he attempts to settle, 1st, whether the cases are rare in which tuberculous cows give an infectious milk; and 2d, whether the milk is infectious only in cows with general tuberculosis, or whether it is also infectious when the disease is localized. He made the trials

of the infected milk by injection into the abdominal cavity of guinea-pigs with the usual precautions. His results were as follows:

1. Milk was used five times from cows affected with a high degree of general tuberculosis in all the organs.
2. Milk was used six times from cows with only a moderate degree of disease.
3. Milk was used nine times from cows in which the disease was localized in the lung.

From these twenty cases the milk was proven to be infectious in eleven. The percentage of positive results in the animals when arranged in accordance with the three groups above given was 80 per cent. in the first group (milk from cows in a very advanced stage of the disease), 66 per cent. in the second group, and 33 per cent. in the third. He found the bacilli in only one of the specimens of the milk, and considers that this, therefore, shows that the inoculation experiments are the more certain guide as to whether the milk is infectious or not.

These results are extremely interesting, although they do not lay as much stress as do mine upon the presence or absence of lesions of the lacteal tract.

The experiments which I am able to report\* have been made possible by the liberality of the Massachusetts Society for Promoting Agriculture, which became interested in the question some time ago, and has put it in my power to carry them on. They have given everything in the way of pecuniary and moral support that the work has required; my own part has been that of general director, and I have had associated with me during the whole time the Society's veterinarian, Austin Peters, D.V.S. For the last year I have also had the very valuable aid of Dr. Henry Jackson and Langdon Frothingham, M.D.V.

All of the inoculation experiments and most of the microscopic work have been done in the bacteriological laboratory

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\*The full notes of these experiments will be found in the Transactions of the Association of American Physicians, vol. iv., 1889.

of the Harvard Medical School, some of the microscopic work at the Society's laboratory in Boston, whilst the feeding experiments have been done and the experimental animals have been kept at a farm in the country devoted to this especial purpose, and situated among the healthiest possible surroundings. Nothing has been set down as the result of microscopic observation that I have not myself verified, and every portion of the work has been carried out under the most exacting conditions, and with every possible precaution against contamination.

Before the farm buildings were used at all they were thoroughly cleaned from top to bottom. Every portion of old manure was carted away, as well as all the old earth. The whole of the woodwork was scrubbed and then washed with corrosive sublimate solution (1 : 1000) and finally white-washed, and every care was taken to secure good drainage and free ventilation. The result and effectiveness of all this have been best demonstrated by the fact that every animal brought to the place made a most marked improvement in its general condition, while some of them even went so far as to appear to get well.

In deciding whether the milk from any cow affected with tuberculosis is dangerous, when the udder shows no lesion, the first point is to see whether the milk contains the infectious principle or not. In this case, of course, that infectious principle is the bacillus of tuberculosis, and attention was turned to that for some time. The observations have been carried on over a long space of time, and were made as follows: The milk was taken from the cow in the morning—or evening, as the case might be—the udders and teats having just been thoroughly cleaned. The receptacle was an Erlenmeyer flask, stoppered with cotton-wool and thoroughly sterilized by heat. The specimen was taken at once to the laboratory, there placed in conical glasses, with ground-glass covers—the whole of these having been carefully cleansed beforehand—and then allowed to stand in a clean refrigerator for twenty-four to forty-eight hours, and sometimes for seventy-two hours.

At the end of that time from ten to twenty cover-glass preparations were made from various parts of the milk or cream. These were stained after Ehrlich's twenty-four hour method, with fuchsin and methylene blue as a contrast color, and then searched with an immersion lens.

We prepared for examination in the way spoken of above, one hundred and seventeen sets of cover glasses from as many different samples of milk. Of these specimens three spoiled, *i. e.*, turned sour or acid before the examination was completed, and must be rejected, leaving, therefore, one hundred and fourteen samples of milk of which the examination was completed. These samples were obtained from thirty-six different cows, all of them presenting more or less distinct signs of tuberculosis of the lungs or elsewhere, but none of them having marked signs of disease of the udder of any kind.

Of these samples of milk there were found *seventeen* in which the bacilli of tuberculosis were distinctly present; that is to say, the *actual virus was seen in 10+* per cent. of the samples examined ( $17:114=10+$ ). These seventeen samples of infectious milk came from ten different cows, showing a percentage of *detected* infectiousness of 27.7 per cent. ( $10:36=27.7$ ). These results are exceedingly interesting, it seems to me, and I confess I am surprised at the size of the percentage named. Not because I had not expected to find the bacilli—I have been convinced for several years that persistent search would show their presence in such cases as those that are here recorded—but because the amount of dilution to which the organisms must be subjected diminished immensely the chance of their being found at all. In no case have they been seen in large numbers, but equally in no case has a diagnosis been made where there was the slightest doubt of the appearance under the microscope.

The large number of cases in which these organisms have been found seem to me to indicate their presence in a still greater proportion of cases, if only a sufficiently thorough examination of all the milk could be made. This of course is out of the question, but the results here given seem to establish, beyond a doubt, the fact that milk coming from cows

with no definite lesion of the udder may contain the infectious principle of tuberculosis, if the disease be present in other portions of the body of the animal. Also, that this presence of the infectious principle is not merely a scientific *possibility* but an actual *probability*, which we should be thoroughly aware of and alive to.

Other interesting facts shown are these: that the cream after rising is quite as likely to be infectious as the milk, because the bacilli were found in the milk nine times after the cream had risen, and in the cream eight times after it had separated from the milk.

In regard to the constancy of the occurrence of the bacilli in the milk, in two of the ten cows in whose milk the bacilli were found, but one sample of the milk was examined; and the bacilli were found in one sample out of several examined at different times, in two cases. In the remaining six cows, bacilli were found two or more times in different samples of milk. So that, as far as they go, these results seem to indicate that the bacilli are present with a fair degree of constancy. At the same time it should not be surprising if one examination was successful and others failed, because of the chances against success, owing to dilution, which were spoken of above.

In nine of the seventeen cases the time of the milking and the portion of the milk used were noted; that is to say, a sample was taken from the first of the milking, or the last of the milking, and then cover glasses made from the milk or cream. In these cases bacilli were found in the cream three times, and in the milk four times, from the first of the milking; in samples from the last of the milking, in the cream no times and in the milk four times; and this too seems to show an interesting point, viz., that the bacilli, if present at all in the udder, are not washed out entirely by the first manipulations of the teats, but may be supposedly present in any portion of the milk. The converse is also indicated, that the manipulation of the udder in the process of milking does not express the bacilli from the tissue into the latter portion of the milk, but that, as before, they may be supposed to be pretty evenly



distributed in all parts of the udder if they be present at all.

Before going on to consider the results of the inoculation experiments made with various specimens of milk, it may be well to glance at the condition of the cows that have been under our control from the time of the beginning of the experiments until they were killed, or until the date of preparing this paper.

The history of each cow, as far as we have been able to secure it, bears out our assertion—as far as the examinations have gone, that none of the udders were affected with tuberculosis—certainly so far as gross appearances were concerned. This was true also, in the microscopic appearance of every case but one (No. 6, Cow F). In this case the gross appearances in the udder were healthy, except that one quarter seemed to be slightly fibrous, and there were one or two yellow spots which were seen to be made up of fat, under the microscope. With a low power lens only a slight increase of fibrous tissue was observable, and the oil-immersion was put on merely as a matter of routine. One giant cell was discovered, containing a number of bacilli, but a careful search failed to show any others, or any signs of change, except the increase of fibrous tissue as noted above. So that the assertion is still true, that we have failed to discover any signs of tuberculosis that were easily recognizable in any of the cows here recorded, and these include all we have had under close observation.

Those from which milk was used for inoculations that are not here given had no signs that permitted of even a probable diagnosis by skilled veterinarians.

We also made an interesting series of experimental inoculations in rabbits and guinea pigs with milk or cream from various cows, in varying quantities and at different times. Of rabbits there were used fifty-seven animals. Of these, five were inoculated with milk which had turned sour, two died of intercurrent diseases in a few days (*coccidium oviforme*), and of one the material was lost before the microscopic examination was completed—so that eight animals are to be rejected, leaving forty-nine upon which the results can be based.

Out of these, five were made more or less tuberculous, as proven by microscopic examination, and in forty-four the results were negative—that is to say, we obtained 5 : 49, or 10.2 per cent. of successes out of all inoculations in rabbits.

There were used thirty-three different specimens from thirteen different cows—that is, there were 23 per cent. (3 : 13) successful results from the cows used, and 15.15 per cent. (5 : 33) successful results from the specimens used.

Positive results were obtained from

Cow P twice (at different times).

Cow L once.

Saunders cow twice (at different times).

The results of the inoculations of guinea-pigs are more striking. There were sixty-five animals used in all. Of these, nine were inoculated with sour milk or cream, and two died in a day or two of other diseases (peritonitis and pleurisy). There are, therefore, but fifty-four that should be counted. In them there were twelve positive results, or 28.57 per cent. (12 : 42) successes out of all the inoculations. There were used thirty-two specimens from fourteen different cows, and the successful results came from six different cows—that is, 42.8 per cent. (6 : 14) of the cows were shown in this way to have infectious milk, and 37.5 per cent (12 : 32) of the specimens used were shown to have active infectious properties.

Positive results were obtained from

Cow P (three times in two different inoculations).

Cow D (three times in three different inoculations).

Cow F once.

Slocum cow once.

Saunders cow once.

Mayhew cow (three times in two different inoculations).

The combining of the results obtained from both rabbits and guinea-pigs shows the following : Successful results were obtained in milk from cow P three times (two different specimens) in guinea-pigs, and twice in rabbits (two different specimens ;) from cow L once in rabbits ; from cow O three times (three different specimens) in guinea-pigs ; from cow F once in guinea-pigs ; from the Slocum cow once in guinea-pigs ; from

the Saunders cow once in guinea-pigs, and twice in rabbits (two different specimens); and from the Mayhew cow three times in guinea-pigs (two different specimens)—that is to say, out of fourteen cows used the milk was shown to be infectious in seven, or 50 per cent. by inoculation experiments.

An interesting fact is also shown, and that is, that bacilli were found in the milk or cream, and successful inoculation experiments made in animals with the same specimen in five different cases (including eight of the successful ones) as follows:

*Comparison of the dates when Bacilli were found in the Milk and the same Milk was used for successful inoculation experiments.*

Cow.	POSITIVE.		POSITIVE.
	Cover-glass.	Guinea-pig.	Rabbit.
P.	Cream, A. M.	Cream, A. M., March 9, 1889.	Cream, A. M., March 9, 1889.
	Cream, P. M.	{ Cream, P. M., March 9, 1889.	Cream, P. M., March 9, 1889
		{ Cream, P. M., March 9, 1889.	
O.	1st of milking, cream, March 9, 1889.	First of milking, cream, March 9, 1889.	
Slocum.	Last of milking.	Last of milking. June 10, 1889.	
Mayhew.	Last of milking, milk,	Last of milking, milk. June 21, 1889.	

The inoculation experiments above detailed seem to me to be deserving of consideration because they were done under the most careful precautions that could be devised. In all cases the experiment animals were kept under observation long enough to determine, so far as could be seen, that they were in good health, and after the inoculations they were separated and kept under close watch, but in healthy surroundings. Some of those that were used were inoculated immediately after purchase, because of a scarcity of the supply at the farm, and were not in good condition. But as no sign of tuberculosis appeared in any of these, their ill health cannot come in as a disturbing factor in the results.

The results obtained from certain feeding experiments with calves show that there were thirteen calves used, and fed for varying lengths of time with milk from cows affected with tuberculosis, but not of the udder. Of these, the material was thrown away from one before the microscopic examination, and this should be rejected in the final results. Of the remainder, there were five positive results obtained and one suspicious. The latter is counted as negative, for the reason that, although giant cells and granulation tissue were seen, no

bacilli were found. There were, therefore, five out of twelve positive results, or 41.66 per cent. It should also be said that of those counted as negative three sets of specimens were suspicious, but were hastily examined for the purpose of this paper, so that a more careful search will very probably increase the percentage of successes.

In the series of feeding experiments on one set of pigs, the milk being given to them from the same cows as before, there were seven pigs used in all, from one litter and healthy parents. Of these, examination showed negative results in two, positive results in two, one was subjected to a very hasty microscopic examination, and the material from two was thrown away—a mistake, as was shown by the results of the microscopic examination of the material from No. 3. There are to be counted, therefore, only five, giving as successful results 40 per cent.

By the cover-glass examinations we have shown that the milk contains infectious material in ten cows out of thirty-five, from which the milk was examined for bacilli—that is, in 28.57 per cent. We have also shown that the milk was infectious, by inoculation experiments, in seven out of fourteen of the cows from which the milk came—that is, 50 per cent. And we have shown the infectious nature of the milk by ocular demonstration and successful inoculation from the same specimens in five cows out of fourteen used—or, 35.7 per cent.

These results are, to a certain extent, preliminary—that is to say, they are but part of the work upon this subject which is being done under the auspices of the Massachusetts Society for the Promotion of Agriculture. The work will not be completed, at any rate, until next year.

They show, however:

1st, and emphatically, that the milk from cows affected with tuberculosis in any part of the body may contain the virus of the disease.

2d. That the virus is present whether there is disease of the udder or not.

3d. That there is no ground for the assertion that there must be a lesion of the udder before the milk can contain the infection of tuberculosis.

4th. That, on the contrary, the bacilli of tuberculosis are present and active in a very large proportion of cases in the milk of cows affected with tuberculosis but with no discoverable lesion of the udder.

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## ENTERITIS IN CATTLE CAUSED BY EATING CORN-STALK FODDER.\*

BY DR. G. H. GOING, State Veterinarian.

*Mr. Chairman and Gentlemen:* By request of Hon. Martin Mohler, Secretary of the State Board of Agriculture for Kansas, I have prepared a statement of what, in my opinion, is the cause of the mortality among cattle, when turned out to feed in the corn-stalk pasture. That death is caused by acute inflammation of the stomach and intestines, is of course quite plain. I have made a number of post-mortem examinations on cattle after dying as above mentioned, after being allowed to feed to repletion upon corn-stalks, and the symptoms presented are invariably the same, viz.: extensive inflammation of the alimentary canal and coverings of the brain. When cattle are first turned into a corn-stalk pasture they feed voraciously, regardless of the disastrous consequences that so frequently follow engorgement with this coarse, dry and almost indigestible food. But as this disease is not of a contagious or infective nature, I am not permitted at the expense of the State to go and personally investigate the symptoms, course and termination of cases reported to me by farmers whose stock suffer. Therefore I can only advise by letter, giving treatment that I have found most successful in cases both of this nature among my own cattle and those I have been called upon to treat in my capacity as a private practitioner, before I entered the service of the State.

The character of the food, and the habits and condition of the animal, operate as direct causes of the disease of the alimentary canal. Very rich and concentrated food taken in undue quantity, or very innutritious substances, such as over-ripe straw or hay, or corn-stalks, which being composed al-

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\*Read before the Kansas State Board of Agriculture.

most entirely of woody fiber and silicon, will cause enteritis. This effect is due more to the action of these substances as foreign bodies, which are not subject to the digestive action of the secretions of the mouth, stomach and bowels, than to the want of other elements necessary to life and the perpetuation of health. The digestive function failing to perform its work, the contents of the stomach and bowels become a cause of severe inflammation in which nature's recuperative powers too often prove unequal to the emergency; especially is this the case where cattle are not thoroughly habituated to the use of unwholesome food. I am fully convinced that the whole cause of the trouble in the cases where cattle die after being turned out among corn-stalks to feed, is due to the indigestibility and the large quantity of food ingested.

My personal experience while in the cattle business was that by allowing the cattle to remain only one hour a day among the stalks until their stomachs became accustomed to the work required of them, and allowing plenty of pure water, no cattle were lost. After being handled in this way for about ten days, I consider it safe to turn them permanently out among the stalks.

When cattle are allowed to engorge themselves with unmasticated and only partly masticated food, especially when it is of a coarse, cellulose character, it becomes impacted in the paunch (rumen, first stomach), or maniply (third stomach), or both. The animal is then unable to regurgitate the contents for the second and final mastication, which is the cud chewing process. As a consequence, this body of compressed material, acting like a thorn in the flesh, creates an inflammation, which, without timely and proper medical treatment, results in fatal termination. This inflammation upon the mucous membrane of the stomach extends from contiguity of tissues to the muscular coats, and then on to the intestines, and finally to the peritoneum, setting up a peritonitis involving the entire contents of the abdominal cavity. This extensive and severe inflammation is sufficient to involve by sympathy the membrane of the brain, and the unmistakable symptoms of meningitis are observed. The affection is usually followed

soon by relief in death. Corn-stalks that are damaged by mould or rot, or contaminated by smut, should not under any circumstances be fed to stock, unless to prevent starvation—when no proper, wholesome food could be procured. In my opinion most of the losses incurred by death from indigestion originating in cattle which are allowed to have free access to corn-stalk fodder, could be entirely avoided by handling the stock as follows:

First—Before turning them into the stalk pasture, see that they start in on pretty full stomachs, of food which they are accustomed to eating; then they cannot possibly over-eat the first time; then allow them to remain in the stalk pasture for about an hour each day thereafter, gradually increasing the time, as before stated. This gives the stomach time to become accustomed to this kind of food. You can then safely allow the stock to run among the corn-stalks at will. Never lose sight of the fact that a constant and full supply of pure water is absolutely necessary for the well-being of cattle while kept upon this class of food.

Notwithstanding the high mortality among cattle affected with indigestion due to impaction, treatment is not always to no purpose, and we can only feel that we have used all the knowledge that we possess in attempting to alleviate or ease the dumb animal's suffering.

The rational treatment of all diseases is to remove the cause of the morbid conditions, and in the case under discussion to remove the indigestible mass from the stomach, is indicated. For this purpose I have found the following mixture to be very successful: Linseed oil, 1 quart; croton oil, 20 drops; molasses, 1 pint; ginger tincture, 2 ounces. Mix well, and give as one dose to each animal. Of course, this is a dose for an adult. Half the dose would be suitable for a one-year-old animal, and so on according to age. If this be unsuccessful in producing a copious discharge from the bowels inside of twenty-four hours, repeat the dose. The sooner this treatment is adopted in the early stage of the disease, the more likely is recovery to follow. As soon as the stomach and bowels are thoroughly cleaned by the action of the purgative

medicine given, administer the following daily to each animal under treatment: Common salt, 4 ounces; nit. potash, half ounce; bi-carb. soda, 1 ounce; syrup, 1 pint; water, 1 quart; mix well, and drench. Three days will be quite sufficient to keep up this treatment. At all times during treatment allow free access to be had by the sick stock to water. Injections are often used with good effect, as follows: Warm water, 4 quarts; 1 ounce soap (dissolved), 1 ounce pure glycerine; mix well, and give by syringe per rectum. Give sloppy food afterwards for some days, such as bran mash, boiled carrots or cabbage, etc.

If the case does not yield to this course of treatment, there is evidently such a degree of impaction that no medicine you can administer will have any effect. Then the only chance left is to cut into the stomach through the abdominal wall and to remove the contents by hand. This, of course, can be done, with any prospect of success, only by a skillful veterinary surgeon.

In cases where distention of the stomach by gas is present, the use of the trocar and canula will soon afford relief. Prevention should be the watchword of the stockowner, and if rationally pursued he will have little need to trouble much about the use of medicine or surgery for the disease under discussion.

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## THE VETERINARIAN AS A SANITARIAN.

BY I. NEWTON KROWL, D.V.S.

It seems to me that the object of all branches of prophylactic treatment is unquestionably the grandest, the noblest and by far the most satisfactory aim of the medical scientist; the prevention of disease is one of the great absorbing problems of the present age; and the truth of the old but frequently quoted adage "an ounce of prevention is better than a pound of cure," is certainly becoming more and more forcibly demonstrated as the years of advancing civilization and luxury roll by. Crowded cities and other great centers of population, associated with the demands of a public almost beside itself, "intoxicated, as it were," with the ever increas-



ing wonderful discoveries of science in the rush of progress, that even vices often seem to become necessities in regard to food, clothing and homes.

The inevitable result of these possibly uncontrollable conditions, is for the masses to eagerly seek relief from the consequent evils, through the efficacy of practical hygiene; and where, may I ask, is there to be utilized a more practical test of the merits of sanitary medicine than that controlled by the veterinary science, the local practitioner of which can surely exemplify this fact with great credit to himself, his chosen profession, and with advantage to the community in which he resides. It is generally conceded by medical men everywhere, and at least apprehended by every thoughtful citizen, that, with at least few exceptions, disease is dependent upon the existence of specific organisms, ("developed through unconcern of the principles of hygiene") some forms positively contagious or infectious, others more or less so, but all are modified or aggravated in their depredations by the existing sanitary arrangements and discipline of a person, home, stable or locality.

The present extensive investigations, experiments and study of the etiology of certain diseases of the human family, in different parts of the world, will undoubtedly give to the public strong, perhaps conclusive evidence, that many maladies of the brute creation are communicable to man through different mediums, such as food and by his daily associations with the domesticated animals; consequently how intelligently vigilant every commonwealth should be in seeing to it that stock—all animals about them, either for food or service, are properly cared for; that the housing, feeding, handling, and the preparing for market the animal food products, is consistent with the rules of hygiene.

The veterinarian, the local practitioner in particular, has special and peculiar opportunities for education in the details of an efficient sanitary police, and can thereby assist in guarding the public against the infringements of the laws of health, which sometimes occur within his special line of service. Yes, the moral obligations of the veterinary practitioner are

imperative, and his knowledge and the results of his observations are certainly of vital importance to all boards of health, although, unfortunately for the people interested, in many instances his services are more or less ignored by many such boards. A limited amount of thought on the subject will assert the fact to all; that, in the public interest, as well as private, the management of the sanitary arrangements of the dairy and its products in all their details, the same of the abattoir or slaughter house, the butcher's stall, the food, the quality of feed, hay, oats, etc., and their honest measure, as well as the stimulation of the aims and discipline of the humane organizations, such as the Society for the Prevention of Cruelty to Animals, in a kindly and intelligent manner, are surely the veterinarian's responsibility.

Of course the benefits to be derived from the above will never be brought about by simple authority, coupled with the arbitrary arrogance and bullying of the average wearer of the badge of inspector, who in many instances is entirely ignorant of everything but the knowledge of the fact that he is an officer, and that he has a *pull in the ward*—no, it is impossible, for intelligent administration of sanitary medicine is successful only through firm, honest, considerate discipline, in which discrimination is indispensable, and patience is a virtue, in order to gain the good will of all concerned for the common good.

That incurable pest in the horse known as glanders would rarely become chronic, endangering the lives of all who come in contact with it or its surroundings, and a suspicious case of this horrible disease would not be concealed in the hope of curing the same, or criminally selling the animal, if all horse owners were more thoroughly convinced of the possibility of its inoculation in man as well as beast, and thanks to the recent labors of the Bureau of Animal Industry, apparatus has been discovered, the manipulations of which will give a more positive diagnosis of a suspected case of glanders.

I doubt that a single instance will ever be recorded, where a farmer or dairyman has permitted a case of suspected tuberculosis, (consumption) in a milch cow to be withheld from

examination; nor would they risk such a disease on their place, were the danger to the public and themselves properly and earnestly presented to them. Tuberculosis in the lower animals, especially in the case of milch cows, has certainly been demonstrated as one of the most insidious dangers to the health of man, and from recent investigations by veterinarians, its growth in our cities, both public and private, is becoming a very serious matter; and this fact, in connection with the thought that the Bureau of Animal Industry is to an alarming extent, handicapped in the control of this disease, was one of my strong reasons for writing these lines, for surely if tuberculosis in the lower animals is to be eradicated, controlled or modified, the local practitioner of veterinary medicine must do the work through the co-operation of the local boards of health, for in this disease it is not a question of quarantining an affected section, but to successfully cope with it, the affected cases must be ferreted out, through perhaps years of professional contact with the animals of a neighborhood.

Doctoring an afflicted horse, prescribing for a sick cow, or the nursing of a poor, broken down, chronically crippled cob, is only one side of the veterinary profession. But the bright side, that which every devoted, enthusiastic veterinary student longs to have presented in its proper light to the consideration of the people of the United States, is its sanitary side, which in Europe is recognized, and is undergoing continual development there, although a high standard of efficiency has already been attained, proving the importance of the veterinarian as a sanitarian, not only when under the jurisdiction and fostering care of a general government, for he is substantially esteemed and appreciated as of great value in the councils of local authorities, which is in fact the most important medium of government, through whose sanction and assistance he can attest himself a public benefactor of high order.

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## EXPERIMENTAL PATHOLOGY,

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### MECHANISM OF THE DEATH OF RABBITS FOLLOWING TRANSFUSION WITH THE BLOOD OF DOGS.

BY G. HAYEM.

Ch. Richet and Hericourt have been engaged in researches into the weak resistance of rabbits when injected with the blood of dogs. In examining into the mechanism of death when thus produced, it is seen that it takes place by asphyxia, resulting from the stoppage of the blood in the right heart, which is filled with cruorical concretions. It is in fact because the hematies of the rabbit are dissolved by the serum of the dog; there is destruction, *en masse*, of the red corpuscles, and it is evident that, in the rabbit at least, the blood in solution stimulates the formation of large thromboses. These facts belong to the order of those which the author has before described under the name of *concretions by precipitation*. These investigations of the effects of the mixture of the two kinds of blood will help to throw light upon the pathogeny of thrombosis and of embolisms of dyscrasic origin.—*Rev. de Sc. Med.*

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### ON A NEW TUBERCULOUS BACILLUS OF CATTLE.

BY J. COURMONT.

This differs much from the bacillus of Koch. It always kills rabbits and guinea pigs, and though found in the blood of the animals thus destroyed, does not, except in certain conditions, produce lesions of a tuberculous character. It may, however, give rise to similar deposits in one or several species of animals, remaining at the same time inert in respect to others. In one species it will always reproduce tubercles, if obtained from a tuberculous lesion, if taken from another culture, but will produce tubercles only at a certain epoch of its growth, age appearing to be one of the factors of this property.

The power of producing tubercles cannot be considered as a simple attenuation of its virulency, as the attenuated ba-

cillus can kill in fifty days, and have no lesions, while these may prove fatal in five days. This explains how a bacillus, which may easily be cultivated or colored, may be for some time overlooked, when regarded only from the point of view of the genesis of tuberculosis. In future, when the inoculation of a microbe obtained from a tubercle fails in its anticipated results in an animal of the same species, it will become necessary, before deciding on the qualities of the microbe, to test it by using it in the inoculation of one or more animals of other species and under different conditions of evolution.—

*Ibid.*

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### UPON THE ETIOLOGY OF TETANUS.

BY CHANTEMESSE AND WIDAL.

With a view to the experimental elucidation of the question of the endemic outbreaks occurring at times in hospitals, the authors inoculated guinea pigs with the dust of walls, curtains, bedding, floors, and other surroundings of the beds in which tetanic patients had died. Those in which the dust of walls, curtains and bedding were used have remained negative, while those made with the dust of the fissures of the floor have always produced tetanus on from the third to the fifth day. Similar results have been obtained with the scrapings of the internal surface of the uterus of a patient who had died of tetanus. Inoculations made with the organs of animals killed in these experiments, have also been negative; and those made with the fluid taken from the edges of the wounds were positive; but in reproducing the disease in series, it was observed that the inoculations become sterile towards the fourth or the fifth series.

The pus and serosity of the wounds contained, with others, the microbe of Nicolaier, but in cultivating this microbe on plates of serum, the culture have never given positive inoculations. The authors explain these facts by stating that the microbe of Nicolaier does not act alone, but that it needs a specially prepared soil and the presence of certain other microbes to become virulent; or that the culture in artificial media, while preserving its germinative faculty, has destroyed

its virulency. This theory is inferred from the following experiment: ground possessing a high degree of tetanic virulency becomes inoffensive when triturated and exposed during three days to the temperature and diffused light of the laboratory.—*Ibid.*

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## REPORTS OF CASES.

*“Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science.”—VETERINARY RECORD.*

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### TWIN-ABORTION IN A MARE.

BY C. E. HOLLINGSWORTH, V.S., La Salle, Ill.

Some time ago a peculiar case came under my notice, which may prove equally as interesting to others.

A mare belonging to a farmer living near here was bred in June (I have not exact dates) and all went well until November, when one morning they found a dead colt lying at her heels. He thought, of course, that it was “all up with her” for that year, but was surprised some time afterward to see unmistakable symptoms of her still being pregnant. This second foetus was carried through almost the full period of gestation, when it, too, was aborted.

An M. D. said it occasionally happened in the human family, but this is the first I was aware it ever took place in the equine race. Heretofore my opinion had been that it was an impossibility in the mare to cast one and carry the other any great length of time.

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## EXTRACTS FROM FOREIGN PAPERS.

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### CONTAGIOUS PLEURO-PNEUMONIA IN A GOAT.

BY PROFESSOR DESSART.

The case here described by the Professor was reported to him as having occurred in a barn where, out of six cows, two had been destroyed in consequence of an attack of pleuro-pneumonia. The goat was two years old, and when taken sick

had been stabling near the diseased cows. Her symptoms were a cough, with loss of appetite, and diminution of milk, and as the lungs seemed still to be sound, she was for the time put aside as a suspect only. A few days later, when the disease had rapidly progressed, the cough had increased, the breathing had become short and percussion of the chest revealed dullness on both sides of the lungs in the posterior half. She was then destroyed, and at the post-mortem the lungs were found hard and presenting a brownish-red coloration, the hepatized portions having the usual appearance of pleuro-pneumonic lungs except that the marbled condition was not quite so marked as in the lungs of pleuro-pneumonic cows. This case is the first one recorded by the author, and taking into consideration the generally accepted theory of the mode of development of contagious pleuro-pneumonia, he advises great care in the application of the sanitary laws relating to pleuro-pneumonia, until new cases are reported which may justify the inclusion of caprine contagious pneumonia in the laws regulating the subject.—*Annales de Brux.*

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#### ECLAMPSIA IN THE DOG.

BY PROFESSOR AD. REUL.

Referring to *eclampsia in the nursing bitch*, the author says; “a functional disease of the nervous system, it attacks the animal suddenly, one or two days after delivery, and has been observed in animals nearly at term and previous to parturition. There exists a great resemblance between eclampsia in the dog and the parturient apoplexy of cattle—a resemblance principally observable in a portion of its manifestations, affecting well bred and kept animals, as the black and tan and Yorkshire terriers, pugs and greyhounds; it is less common in other breeds. Primipares in good condition are mostly affected, and may have several attacks. Among its causes, exposure is one of the principal, but violent moral impressions have a serious influence, such as the loss of one or several pups, fright, anger, &c. The disease appears suddenly, the animal being first more or less nervous and agitated,

soon becoming paralyzed, lying on her side, panting, and screaming more or less loudly and painfully. The nose remains cool, and somewhat moist, the pulse becomes hard and accelerated, skin is dry and warm, and both the flow of milk and defecation and micturition cease. At times, at the beginning, the temper is affected, and the animal becomes ugly, cross and snappish, and possibly suspicions of rabies may be entertained. The progress of the disease is rapid, ending generally in the first twenty-four hours, either in death or recovery. The treatment recommended consists in bleeding from the saphena, the paw being well masséd to stimulate the flow of the blood, bags of ice or warm poultices on the head, glycerined rectal injections, friction over the vertebral column, and the administration, every half hour, of a tablespoonful of a potion made as follows: Sulphate of soda, 15 parts; nitrate of potassa, 5 parts; water, 80 parts; sulphuric ether, 20 parts. Mix.—*Annales de Bruxelles*.

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## SOCIETY MEETINGS.

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### NOTICE TO THE MEMBERS OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The annual meeting of the Association, to be held in Chicago September 16th and 17th, promise to be the most important meeting held by the Association for many years.

A paper entitled "Some Recent Researches in the Bacteriology of the Diseases of the Domesticated Animals," is now in preparation by Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, for this occasion. It will be illustrated by the use of the camera, and will prove rich food for thought for our members, and afford a wide field for discussion.

A second paper, by Professor R. S. Huidekoper, on the interesting topic of "Contraction of the Horse's Feet and Contracted Heels," illustrated by diagrams and models, will prove a source of enjoyment to all those who attend. From personal knowledge of the contents of this paper, the Secretary begs to state that this will prove one of the most complete contributions on this subject that has appeared during the past two years before an English-speaking body, inasmuch as it contains not only the views of the writer, but also a review of the theories and deductions offered during the past ten years by the most eminent writers in Europe.

A third paper is announced, from the pen of Prof. A. Liautard. Though the subject is not yet announced, we can rest assured—from our experience and relations with him, whose name has been identified with the whole work of our



Association since its birth, and with every movement of a public character that has had for its aim the elevation of the veterinary profession in America—that a rich treat is in store for us.

Announcements are already made of important matters that are to aid in making up the reports of several of the committees, and it will be of much importance for every member to be present, to take part in the discussion of these papers and to place himself on record in the outcome of the deliberations of the subjects now placed in our keeping.

The sub-committee of the Comitia Minora have now in contemplation the formation of a party to leave Boston on the 13th of September, New York on the 14th, and from there to visit Philadelphia, Baltimore and Washington, thence to Cincinnati, from which point a day's tour is to be made among the homes of the trotters in Kentucky, reaching Chicago on the morning of the 16th. This plan offers great inducements in lower rates of passage, special cars for our party and a more thorough reunion of our members. It now rests with the eastern members of our Association to make this plan a success, and the Secretary will be glad to have the names of all candidates for this trip. The greater the number the better the terms. Other advantages of this plan will be announced in a later number of the REVIEW, as we are enabled to calculate on the number going.

It behooves every member of the Association to consider his duty toward the growing West, and its vast number of earnest, hard-working veterinarians, who should to-day be identified with our Association, that its movements may be of more force and power in leading the profession in the United States.

W. HORACE HOSKINS, *Sec'y*,  
12 So. 37th St., Philadelphia.

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#### MASSACHUSETTS VETERINARY ASSOCIATION.

The annual meeting of the Massachusetts Veterinary Association was held at Young's Hotel, Boston, April 23, 1890, the President, Austin Peters, M.R.C.V.S. in the chair.

The members present were : Drs. Blackwood, Bryden, Hitchings, Howard, Osgood, Pierce, Peterson, J. S. Saunders, and Winchester. Honorary member : Dr. J. H. Stickney. Visitors : Drs. Becket and Emerson of Boston, and Dr. G. H. Bailey, of Portland, Maine. The minutes of the last meeting were read and accepted.

The election of officers for the ensuing year was then held, resulting as follows :—President, Thomas Blackwood, V.S.; 1st Vice-President, B. D. Pierce, M.R.C.V.S.; 2d Vice-President, Wm. Ferguson, M.R.C.V.S.; Secretary and Treasurer, Austin Peters, M.R.C.V.S.; Executive Committee, F. H. Osgood, M.R.C.V.S., J. S. Saunders, D.V.S., W. Bryden, V.S., D. D. Lee, M.D.V., and Madison Bunker, D.V.S.

Various matters of business were disposed of. It was then decided to discuss the subject of rabies at the next regular meeting, May 28th, Dr. J. F. Winchester to open the discussion, and that Dr. C. P. Lyman, of the Harvard Veterinary School, and Dr. H. C. Ernst, of the Harvard Medical School, be invited to attend and follow Dr. Winchester in the discussion.

Dr. Burr, the Board of Health's meat inspector at the Brighton abattoir, was to have read a paper upon "Meat Inspection," but as he was unable to be present it was voted to defer his paper until he could attend a meeting and read and defend it himself.

The meeting then adjourned to the Association's annual dinner.

AUSTIN PETERS, *Secretary*.

## ILLINOIS AND INDIANA VETERINARY MEDICAL ASSOCIATION.

Under this heading is announced a meeting of a number of our friends which will take place on the 4th and 5th of June at Terre Haute, Indiana. The following programme shows that a pleasant time may be anticipated by those who will be fortunate enough to be able to attend.

### FIRST DAY, EVENING SESSION.

Address of Welcome, F. C. Danaldson; address by Eugene V. Debs; Paper by W. L. Williams—"The Pathology of Azoturia as suggested by its History and Symptoms." Paper by R. C. Myline—"Surgery of Fistula."

### SECOND DAY—MORNING.

Association will visit points of interest, including Fair Grounds and important Stock Farms.

### SECOND DAY—AFTERNOON.

Recess for those desiring to attend races.

### SECOND DAY—EVENING.

Paper by G. W. Buckner—"Pneumonia." Papers by H. R. Macaulay and A. J. Thompson. Paper by Dr. F. S. Billings—"Swine Plague." Other papers will be presented, subjects not received.

## LONG ISLAND VETERINARY SOCIETY.

A regular meeting of the Long Island Veterinary Society was held on May 21, 1890, at No. 74 Adam Street, the President, Dr. Geo. H. Berns, in the chair. The following members were present: Drs. Berns, Bell, Atchison, Newman, Bowers, Breslin, Buckley, Pendry.

The minutes of the previous meeting were read and approved.

The Board of Censors made no report.

The Committee on Army Legislation reported progress.

The Committee on State Legislation reported progress.

A communication from Dr. John Lindsay, containing his resignation from the Society was read, the reason assigned being inability to attend the meetings of the Society. The Doctor, residing in Huntington, L. I., found it impossible to attend meetings held in Brooklyn. The resignation was accepted and the Secretary instructed to notify the Doctor of the acceptance with the regrets of the members.

The next order of business being reading of papers, Dr. Samuel Atchison read an interesting paper entitled "Professional Training and Ethics," which was generally discussed by the members, after which a vote of thanks was tendered to the essayist.

It was moved by Dr. Pendry and seconded by Dr. Bowers, that the cost of printing reprints of the Proceedings of the Society be held for future consideration. Carried.

It was moved by Dr. Pendry and seconded by Dr. Bell, that the Secretary communicate with the editors of the AMERICAN VETERINARY REVIEW, and *Journal of Comparative Medicine*, notifying them that the paper read at this meeting of the Society would be withheld from publication, as its composition contained matter of a personal nature.

Bills for type-writing of last month's paper (\$5.00) and fifty reprints of Proceedings of Society (\$6.00) amounting to eleven (\$11.00) dollars, were ordered paid.

The Chair appointed as essayist for June meeting Dr. Thos. M. Buckley. Meeting then adjourned.

D. S. BRESLIN, D.V.S., *Sec'y.*

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## CORRESPONDENCE.

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### GRADUATES AND NON-GRADUATES.

*Editor American Veterinary Review:*

In a recent edition I notice a very exhaustive article, written by a non-graduate of Illinois, denouncing the movement on the part of the graduates for veterinary legislation. I am one of his weaklings, as he so chooses to call us, and can conceive of several ways in which the graduate could be benefited by legislation on this subject; not that we want to monopolize the whole business and get all the benefit ourselves, but as a source of much greater benefit resulting to the class of men we are working for, viz., the horse owner and stockman. I am located in a town of fifteen hundred inhabitants, surrounded by one of the most productive farming and stock-raising regions in Iowa, which is populated by a class of people that are educated up to the idea that should anything go wrong with any of the stock, call a horse doctor, of which class this town, as might be said of numerous others, has its supply. Farmers and stockmen each have a choice among three or four so-called veterinarians, and measure the ability of such men by the manner in which they wield the dehorn-

ing saw or castrating knife, and the compensation for services, along with the number of years they have been in practice, which will invariably be twenty-five or thirty years, and not less than twenty years, as claimed by them. These men seem to be doing considerable driving over the country, even in the winter season, working with an outfit including library, not exceeding in value ten dollars, a tin medicine case containing probably three or four remedies, a drenching bottle and a jack knife; library consisting of two or three volumes, an ancient issue of the old fashioned *Horse Farrier*, embracing every subject pertaining to veterinary science, boiled down to about four hundred pages, handed down probably from the last two or three generations.

Now as to their charges. One of these "butchers" will drive three or four miles into the country and stay up with a sick horse all night for a dollar and a half or two dollars, then run a live stock insurance business on a small scale on the outside, by taking the case "no cure, no pay," which to several of the less educated class means considerable.

Is there any wonder that we, claiming to be respectable, and wanting to make an honest living practicing veterinary medicine, want legislation on this subject? Could we support a family or pay our board bill (provided we are single), at such proceedings? Could we clothe ourselves in a manner becoming to the profession at such business?—men that the operations, although they may seem trivial to us, such as hypodermic injections, paraceitises thoracis, relieving the bladder by means of the catheter, taking temperature, etc., are entirely foreign to them, and which I honestly believe, if nine-tenths of these so-called veterinarians were asked what the normal temperature of a horse was, he would be entirely ignorant of it.

These men rely upon drugs entirely, using their three or four remedies as a specific for every disease animal flesh is heir to, administering them in nine cases out of ten when they are contraindicated. It is a shame that the poor dumb brute is confined to such surroundings. Is it any wonder legislation is asked for? It is not the design on my part to exaggerate

or misrepresent the true condition of quackery in Iowa. I think my fellow graduates will bear me out in my statements descriptive of the true condition. What can be said of this community, can be said with equal propriety of several communities in Iowa.

Now what we are after is legislation on the subject, to correct the existing conditions—we that have fitted ourselves for the practice of veterinary medicine at a cost, including outfit, of from one to two thousand dollars. Should a law be passed in the State prohibiting none but diploma men from practicing, who would share the greater benefit? It seems plain that the owner of the stock would get his share. In our clamor for a practice act in this State, it is not designed on our part to blot out the non-graduate that has in his possession such extensive libraries consisting of most of the books now published on veterinary science, and has such wonderful success as was alluded to by the author of the article now in question. If he is endowed with ability to read and comprehend them, it is reasonable to think that he is fully competent to take an examination before a Board of Veterinary Examiners, which in all probability would be provided should a practice act pass the Legislature. We want such men among the ranks; we would give you a hearty welcome should you qualify by a test of your knowledge on the subject.

I fear, though, that this class of men would bear a very small proportion to the ones before described in this article. Veterinary science is advancing, probably not as fast as did its sister profession, that of human medicine, but building slowly, advancing little by little on a firm basis. What is building; is it quackery, or is it education? Formerly the reputation of the veterinary surgeon was not one of the best among men. Such a state of affairs does not exist to-day where educated men have taken up the work. Veterinary science is beginning to be recognized as a science among scientific men of other branches of science. If such be true, as we believe it to be, let it be treated respectably. Now to treat it in this manner, let us rid the profession of so many empirics by legislation. It would raise the standard higher, throw out an

inducement for more young men of intellectual worth to enter the profession. It would almost give us an equal footing with the M.D. It has not been many years since they were compelled to put up with quack competitors in this State, but are now enjoying a much better condition of their profession, as a result of a practice act enacted by the Iowa Legislature in '86. Since that time more diploma men in that profession have come into the State and taken up the places occupied by "quacks," making a good lively competition among men that were worthy to be called competitors. We hope ere long to say as much for our profession—before many more meetings of the Legislature to say that we have been sustained in our desires. It might be well to add that we are standing on the merits of our work at present. Were it not for this condition of affairs, we would be compelled to surrender our profession and go at something else.

Respectfully,

J. H. PLATT, D.V.M.,

Montezuma, Ia.

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#### INQUIRY.

FORT WINGATE, NEW MEXICO, April 20, 1890.

*Editor of American Veterinary Review,*

SIR:—In your valuable journal of this month, is a note on page 35 entitled "Cocaine in Carpel Tenotomy;" I read it, but must confess I do not understand it although I have often seen cocaine (hydrochlorate of cocaine) used as a local anæsthetic.

The author states he injected one ounce (480 grains) of cocaine under the skin; how did he do it? It takes 700 parts of water to dissolve one part of cocaine. What is the dose (hypodermic) of cocaine for a horse? The dose by the *mouth* in man is from one-twentieth to one grain. If the Doctor used the hydrochlorate of cocaine it would take less of the solvent but the value of the injection would at wholesale price be not less than \$10.; this, however, may be a matter of no consequence when the surgeon is well paid for his service.

If a two per cent. or four per cent. solution of hydrochlorate of cocaine was used, what good could the surgeon gain from a few drops on the outside? Did they do any good at all? I would be thankful for some information on the above mentioned points, as I am studying veterinary surgery at present.

Hoping you will pardon my liberty, I remain, very respectfully,

Your obedient servant,

W. BAY.

*Post Hospital, Fort Wingate, N. M.*

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#### PRACTICE FOR SALE.

A \$2000 a year practice for sale cheap, located in one of the best stock-raising districts of Iowa. No other graduate within 30 miles. Correspondence solicited.

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#### SOUTHERN CALIFORNIA VETERINARY MEDICAL ASSOCIATION.

LOS ANGELES, CAL.

DEAR SIR.—The Southern California Veterinary Medical Association instructed me to forward you a notice of our formation, also a copy of our by-laws. We meet on the first Tuesday of every month. "We are seven" at present: President, Dr. Rowland, D.V.S., Vice-President, Dr. Whittelsey, D.V.S., Treasurer and Secretary, Dr. Morrison, D.V.M., Dr. Oliver, V.S., Dr. Pierce, D.V.S., Dr. Blackington, V.S., Dr. Witherspoon, D.V.S.

The society held its first meeting, with Dr. Rowland in the chair, at Los Angeles, Cal., August 6, 1889.

The President addressed the Association, stating its purposes in a few well-chosen remarks, and hoping that the association and interchange of ideas would be of mutual benefit. Dr. Rowland then read a very interesting paper.

The members then took part in the discussion. A general discussion then took place on cases that were interesting that came up in practice.

The meeting then adjourned to meet on the first Tuesday

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of each month. I will send you an account of our meetings every month. Should any paper be read of more than usual interest I will send it in full.

Yours truly,

W. D. MORRISON, *Secretary.*

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### NEWS AND SUNDRIES.

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THE EXTERMINATION OF HYDROPHOBIA IN ENGLAND.—In *Nature*, for July 4th, we find an account of a meeting at the Mansion House, London, held July 1st, to discuss the prevention of hydrophobia. The increase of rabies, on the one hand, and, on the other, the efforts of certain coteries to resist the introduction of the Pasteurian methods into England, have caused this rally of the friends of Pasteur. Two letters, among others, were read at the meeting, written by Professor Huxley and M. Pasteur. Huxley's letter characterizes very pungently the opposition of the anti-vivisectionists as coming from a class of people "who prefer that men should suffer rather than rabbits and dogs." His opinion of the value of M. Pasteur's work is positive. He says: "Medicine, surgery, and hygiene have all been powerfully affected by the labors of Pasteur, which have culminated in his method of treating hydrophobic victims." The letter of M. Pasteur, dated as late as June 27th, was read by Sir Henry Roscoe, M.P. It is interesting as giving his latest figures, amounting to nearly seven thousand patients treated. The number, to June 1st, was six thousand nine hundred and fifty, and the deaths were seventy-one. In short, the general mortality has been one per cent., but, if an exception is made of the cases in which hydrophobia had "burst out" before the curative process could be complete, the general mortality is reduced to 0.68 per cent. M. Pasteur assures the English people that they can "stamp out" rabies in their country if the proper measures, which are entirely feasible, are carried out, and he cites to them the fact that Norway, Sweden and Australia are countries where the disease is not known.—*N. Y. Medical Journal.*



# AMERICAN VETERINARY REVIEW,

JULY, 1890.

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## EDITORIAL.

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MEETING OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.—Two months more and then *en route* to Chicago—important steps taken—it may make the true *United States Veterinary Medical Association*—hard work of the committee—papers promised—programme well laid out—our thoughts—is it all eastern—where are the western veterinarians—our fears—perhaps the result of our anxiety for success—yet they may be correct—an open letter from a western veterinarian—Dr. Williams gives severe hits, and many of his remarks seem to agree with our thoughts—his open letter. AMERICAN VETERINARY COLLEGE BUILDING FUND.—American veterinary education—veterinary colleges of to-day—colleges in years to come—private establishments—the good they do—the danger that threatens them—duties imposed on officers of colleges—obligations to alumni—new action of the officers of the A. V. C.—inquiries by an alumnus—the condition of affairs—twenty thousand dollars wanted—five thousand are donated—fifteen thousand more will allow a building to be started—will that plan succeed?—will it fail?

MEETING OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.—A little over two months more and the meeting of the United States Veterinary Medical Association will be held in Chicago. In Chicago!—A bold and grand move that the Association will make—the first which is likely to bring out that body as the true veterinary organization of the whole United States. We say the first, as the attempt made some years ago through the call at Cincinnati can scarcely be considered as one which had the slightest show of success. Yes, at Chicago—for the first time—the veterinarians of the East and those of the West, those of the North with those of the South, are to meet and fraternize, and to sanction by their union the organization which for years has been known as

*The United States Veterinary Medical Association.* To realize this, to make of this meeting a success, the committee in charge have worked hard; and, if we can judge by the communications and notices that have appeared in the REVIEW and in the *Journal of Comparative Medicine*, the committee have done all that they thought was possible. Papers have been promised, traveling arrangements have been made, and a good programme has been laid out for a whole week. Yes, the committee deserve well, and it is to be hoped that success will be the result. And yet, when we carefully read the notices that have been published, it seemed to us that something was missing. We feared that something was wanted, and in that want we looked for danger. It appeared to us that if much was said of what the eastern veterinarians were about doing, not enough had been shown of what our friends in the west would contribute. We learned of papers promised by gentlemen in Pennsylvania, New York and Washington, but what about Ohio, Indiana, Illinois, etc.? If there be good men in the East, are some not to be found also in the West? If the first were to be heard, would not the second be listened to? These are questions that present themselves to our mind, and we do not know but that we may be prompting unnecessarily for things which if neglected might be a bar to the successful issue of the meeting.

However, while we are waiting and preparing ourselves for our western trip, we have received an open letter, directed to the secretary of the Association, from one of our colleagues, which seems to corroborate our fears. We hope that, severe as the letter is, it will prove a good warning and a prompt stimulus to take action to prevent the possible failure which threatens the next anniversary meeting of the Association.

The letter of Dr. W. L. Williams reads as follows :

[OPEN LETTER].

BLOOMINGTON, ILLINOIS, June 19th, 1890.

*Comitia Minora of United States Veterinary Medical Association, W. Horace Hoskins, D. V. S., Secretary :*

DEAR SIR:—Recognizing the desirability and need of a national society which should faithfully represent the veterinary profession of the United States, a number of western veterinarians some months ago asked you to hold the next

meeting of your organization in Chicago, with the result that you acceded to our request.

The contents of the letters of other veterinarians addressed to you on this matter are unknown to me, but they were probably of a very similar tenor to mine, so that when it is spoken of the others may probably be included in the same category.

In my letter your society, (which Dr. Huidekoper, Rep. 26th An. Meeting U. S. V. M. A. 1889, p. 3, as retiring President, dubbed the "Mud Turtle Society," on account of its laziness) was invited to come out from behind the Alleghany mountains, hold a meeting in Chicago, permit and invite western veterinarians to attend and fraternize with you, let your body cease to be a society of the Atlantic States and become, in harmony with your name, a national organization.

In reply to my letter you wrote: "I have decided to cast my vote for Chicago and to use my influence in having the meeting held there. Should Chicago win, the responsibility will then rest on you western veterinarians to make the meeting a success. \* \* \* I feel compelled to defend the Association in part for its infrequent pilgrimages to the west; first, because two-thirds of its members are east of the Alleghany mountains, (why?), and only once since I became a member was there any effort to hold a meeting in the west. I voted for it, and some twenty-five of us journeyed to Cincinnati, Ohio, with what result—the *application* of two members of the profession for membership. I believe Drs. Meyers and Detmers almost completed the quota of western veterinarians present."

The only record of the Cincinnati meeting available to me (Dr. Huidekoper's retiring address) does not show that the eastern veterinarians furnished any papers or other programme to induce western veterinarians to attend, nor that they were invited to supply or take part in any such programme, so that the only inducement held out to western veterinarians to attend the meeting of your society, which has a well-earned record for holding worthless meetings, consisted apparently in the opportunity of gazing upon your personnel, and the result was that few availed themselves of this rare opportunity.

Again, in your note of February 18th, after stating that Chicago had been decided upon as the location for your next meeting, you say "the responsibility of the position I took in so strongly favoring Chicago, will now largely rest upon you to furnish those who opposed our desire with such evidence of western interest and loyalty upon the move that shall prove the wisdom of the change. The Comitia Minora have placed the matters in the hands of a sub-committee of three, consisting of Drs. Huidekoper, Wray and myself, to whom you will communicate your plans," &c.

After months of patient waiting for an outline of the responsible duties which we were expected to discharge, you have advised us under date of May 9th that "We are giving our untiring energies in the east here to the accomplishment of a special train. \* \* \* The veterinarians of the west can do us no greater honor than by their presence and amalgamation with us." \* \* \*

Then, after an approval of a proposed circular letter to veterinarians in Illinois, designed to awaken interest in the Chicago meeting, you suggest that

we liberally advertise your programme consisting of an excursion train and two promised papers by veterinarians of the Atlantic States.

You further add to our responsibilities by asking us to submit for your consideration three suitable halls for the meeting, and also ask that "the names, credentials, and vouchers of all applicants" for membership be sent you as fast as possible, and suggest that you "have in contemplation a special plan of admission for such names, for this meeting, in order to avoid the loss of time of one year before becoming actual members."

In your favor of the 11th inst., you inform me that at a late meeting of your committee you "succeeded" in arranging that for the Chicago meeting you would "recommend" immediate action on suitable applications, your language being such as to lead to the conclusion that such action was not by unanimous consent, and hence liable to suffer at the hands of the minority of your committee, or later when your recommendation should come before the Society, so that no western veterinarian, regardless of any attainments, can have any assurance that his application for membership will be acted upon at the coming meeting, although your constitution and by-laws make no such delay necessary; and yet you term this possible recommendation "a great concession to the west." The thousand qualified veterinarians of the west have asked no "great concessions," nor small ones, from the "Mud Turtle" close corporation of the Atlantic States, we having existed for several years without your charity and apparently without your knowledge of our being, and we do not feel now like asking you to at all humble yourselves in our behalf. Several western veterinarians having suggested to you that the west should be represented on the programme, you reply that "I am informed by Pres. M. that Dr. T. B. will read; Dr. G., of the army, *desires* to occupy a place on the programme, and with Drs. P. and L. on very important committees, and the programme already mapped out, we are fully assured of rich material for food for thought."

As Dr. T. B., under a later date than yours, informs that he is undecided as to a topic for his paper, and somewhat apprehensive (owing to recent utterances of your committee) that a paper from him is really not desired, his participation in the programme as a western veterinarian is somewhat problematical, and since you have merely stated that Dr. G., of the army, "desired" to occupy a place on the programme, without saying that his wish had been granted, gives no rosy view of his prospects, besides which a veterinarian of the army can in no wise be considered a representative of veterinary science in the west; and so we are represented by Drs. P. and L., who hold inferior positions on important committees, which may or may not make reports, and with this representation of the west in the Chicago meeting, your programme has been "mapped out," completed and sealed.

Your communications are in full accord with the public utterances, through the *Journal*, of Dr. Huidekoper, of your sub-committee, who announces each issue that the programme of the Chicago meeting will be of great interest, consisting of an excursion train and two eastern papers.

Western veterinarians have as yet received no assurance, either through you or the *Journal*, that they will be cordially welcomed to the Chicago meeting as professional brethren; they have no assurance of being permitted to take part in

the meeting, and are scrupulously excluded from any active part in the programme, so we have the spectacle of a national society congregating on an excursion train, whose doors are locked when the Alleghany Mountains are reached, and the Society journeys one thousand miles from home to hold a meeting, with apparently no other purpose in view but the charitable act of allowing western veterinarians, who are not beggars, to get a glimpse of the "wise men of the east."

Your utterances have already broken up a plan for concerted action on the part of the presidents of veterinary societies and professors of veterinary science in agricultural colleges in several of the western States, intended to awaken an interest in your society. And every plan and effort on our part is so thoroughly clogged that no other course is left open to us but to renounce all responsibility for the success of the meeting, and allow it to rest where it properly belongs—with your committee—or, as a prominent professor of veterinary science puts it, "let them run their own show."

We asked you to hold a national veterinary meeting in Chicago, and should you have arranged to do so there was every prospect that it would prove the largest and most influential veterinary gathering ever convened in America; but if your present attitude is to be maintained, you will do well to unlock the doors of your excursion train when you reach Cincinnati, and permit the entrance into it of fresh recollections of the meeting of 1884, and prepare yourselves for a similar failure at Chicago.

If you can bring all the necessary elements of success for a national veterinary meeting on an excursion train from New York, you are surely prepared, otherwise we would suggest that your position on several important questions be promptly and publicly announced:

1st. Do you recognize as professional brethren those of us in the west who have graduated from the same veterinary colleges from which the most of you have emanated, or in which you teach?

2d. Is the Chicago meeting to be national?

3d. If national, why has your *national* committee frittered away nine-tenths of its time and all energy in arranging for, and devoting nearly all your public utterances to, a purely local excursion train, and leaving wholly neglected one-half (numerically considered) of the veterinary profession of the United States?

4th. Will western veterinarians receive a *cordial* welcome to the Chicago meeting, and will those of us who fully meet the requirements of your constitution and by-laws be unanimously and heartily recommended for immediate election to membership, so that our intercourse with you may be fraternal and pleasant, or will the consideration of our applications be delayed for one year, contrary to your written laws?

6th. Will your Society be kind enough to abstain from making "great concessions" to us, and bestow respect, not charity, upon us?

Very respectfully,

W. L. WILLIAMS.

AMERICAN VETERINARY COLLEGE BUILDING FUND.—  
The history of American veterinary education yet to be written will contain some very interesting and possibly surprising

facts. As time lapses and circumstances alter, changes will doubtless occur in the way of progress and development, which will prove that the veterinary study of the present and of the future are two things quite distinct and different in their aim and accomplishment. Where will be the veterinary colleges which have been started, some as long ago as over thirty years, with others of later origin? Some of them established by private enterprise, and others with official assistance—so to speak. Where will those be which, though legally organized and chartered, have been kept alive only by personal efforts and private financial aid?

A glance at what has been done so far, shows that at present but a single one of these schools has succeeded in releasing itself from the dangers which threaten the existence of schools sustained by private and personal enterprise, and this notable exception is the Montreal Veterinary School, which by its good fortune in finding shelter under the protecting wing of McGill University, has, to a great extent, obtained a contract of, if not assured immortality, at least of an existence as long as the university itself survives other schools, whether in the United States—as in New York, Illinois—or in Canada, none have as yet succeeded in drawing a similar prize. Irrespective of what their standing may be; without reference to the size of their classes, and notwithstanding the excellence of their reputation, they are all more or less exposed to the same danger, if not of a sudden collapse, at the least, of encountering very great embarrassments. Schools, like those of Philadelphia, of Boston, and of Cornell, or of such of the States that are directly connected with agricultural colleges, are not similarly exposed, their life depending on that of their reliable supporting institutions.

Does it not then become the duty of the officers of those schools which are still obliged to trust to their own resources to take such active steps in the direction of an assured support that the institutions they are governing shall be permanently protected from the possible calamity of failure to maintain their existence? The sooner the necessary steps are taken, the better. Practicable and simple at the beginning,

they would, in the long run, place these institutions in the position of bearing any of the dangers which seem to be threatening the private institutions, and assure them of permanent and increased usefulness. If this is not a sufficient motive, the obligations which the trustees of our institutions assume toward their alumni should be recognized as of such a nature that they are bound to look after the *alma mater* of those whom *they have graduated*.

These remarks are suggestive to us as pertinent to certain efforts towards the erection of a permanent home for their school, now in progress by the officers of the American Veterinary College—efforts which, we believe, might have been advantageously entered upon long ago. If for the last fifteen years, during which the college has been running its successful career, a sinking fund had been maintained, it would to-day have assumed sufficient proportions to realize the object in view, to wit, to provide the institution and its alumni with a suitable building which should be their own, and which would constitute a condition as would almost serve as a guarantee of long existence, as without it, it will never progress.

And this obviously applies equally to other schools which are in the same condition. The private and personal interests which are now engaged in prosecuting the work of these institutions, and which now constitute their strength, will inevitably, sooner or later, interfere with their management, and to a greater or less extent, threaten their very being; and what then? What is to become of the material gathered and accumulated? What of the time and efforts which will have been dissipated, and with the labor wasted, and, above all, what will become of the *alma mater* of those who hold her diplomas? To-day, the schools to which we are referring are more or less dependent on one man—if not by the professional work which he does in connection with the school, at least by his private, and too often, pecuniary assistance, and certainly it is greatly to be regretted that interests so great are thus placed at the mercy of contingencies and circumstances, unforeseen, it is true, but which are likely at any moment to become factors and potencies for evil.

For these and other reasons, it seems to us the movement inaugurated by the officers of the American Veterinary College every way is a proper one, and it is to be hoped it will meet with ample success. So long as the people of the Excelsior State are not prepared to help an institution whose record is so well enough known to form its own certification, it remains to be seen whether this is not the next best step to take.

And while we are referring to the subject, we think it well to present to our readers, for the special benefit of those who may be directly interested in our answer, a communication by us received from an alumnus, bearing on the same subject.

#### AMERICAN VETERINARY COLLEGE BUILDING FUND.

*Prof. A. Liautard, Editor :*

DEAR SIR.—Will you allow me to return the enclosed, and ask through the REVIEW some information. The names that I read on the circular are sufficient evidence of the earnestness of purpose of the object in view, it is true; but the subject is important, and I think deserves more light than can be formed from the printed document. I am ready to help when I know more about it.

Yours very truly,

AN ALUMNUS.

The following is "the enclosed":—

DEAR SIR.—The time has arrived when there is imperative need of a college building for your Alma Mater; to this end the Trustees and Faculty have been and are doing their utmost. Plans under careful and long consideration are now matured, but \$15,000 are still required, and to realize this your Alma Mater hereby makes a personal appeal to you for a donation.

There are now three hundred and fifty alumni, and we feel that their collective donations would be a substantial contribution toward this object.

Answer *by return of mail* what you can donate, if called upon, within the next thirty days. Your answer and those of your fellow alumni will determine whether we can or cannot commence to build a college this summer, that your Alma Mater may take possession of the same next fall.

F. D. WEISSE, M.D.,

*President of the Board of Trustees.*

A. LIAUTARD, M.D., V.M.,

*Dean of the Faculty.*

This letter reached our office in due time, and we take this opportunity to answer it. It is but right that the alumni of the American Veterinary College should know the facts



which have induced the President of the Board of Trustees and the Dean of the Faculty to take the steps proposed in the circular.

Many of the alumni are aware of the efforts made several years ago to the same effect, but which were frustrated through mismanagement, but not until the officers of the college had been left in part possession of two lots of ground, which had been selected as the site of the contemplated building.

Some two years ago another attempt was made, in the form of an application to a number of wealthy citizens of New York, asking for donations or subscriptions to a building fund for the college. This essay was a failure; about as complete as it could well be, the sole result being a gift of \$25.00, contributed by some anonymous friend. Attempts were also made to find some wealthy and public-spirited gentleman who, even with the inducement of liberal interest, could be induced to place us under a roof of our own. At first this seemed possible, and, in fact, up to a recent date we had hopes in this direction to such an extent that plans had been drawn and rough estimates of expenses procured. But as we were about reaching and realizing the so-long-sought and hard-worked-for result, a financial drawback presented itself, and the matter was dropped.

Now the whole thing may be thus simplified:

There remains due in immediate cash upon the two lots now partly owned by the college, a sum of *twenty thousand dollars*. Were *this paid*, a building could be put up immediately, with a building loan to the amount of \$30,000. Of this sum of \$20,000, the Board of Trustees and Faculty of the college will donate one-quarter, or \$5,000. There remains then a deficiency of \$15,000, and we have looked to the alumni for help to this extent. We know that it is hard work, we recognize the fact that it is difficult, perhaps impossible, for some to give anything whatever, but let every one act upon his sense of duty, and give what he can afford. A number of the alumni, upon a former appeal, have once already proved their willingness to help. This was when the first attempt, before

referred to, was made. In remembering what they did then, we have inferred that the entire body of alumni might, with propriety, be called upon, and, judging by the very few answers that have already reached us, we have every reason to believe that the amount required will finally be donated. If we are disappointed in this expectation, we intend still to persevere in this line of work and reach, some time, a successful issue, if such a thing is practicable.

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## ORIGINAL ARTICLES.

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### THE PATHOLOGY OF AZOTURIA

AS SUGGESTED BY ITS HISTORY AND SYMPTOMS.

By W. L. WILLIAMS, V. S.

A paper read before the joint meeting of the Indiana and Illinois Veterinary Medical Associations.

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The number of theories as to the pathology of azoturia is limited only to the number of those who have written upon the subject, each writer apparently entertaining different views, so that it can well be said that there is no generally accepted doctrine as to its intimate nature, and we may add that each theory so far offered is open to more or less serious objection.

The most uniform and serious objection to all the theories so far proposed, is their essential lack of harmony with the preparatory and clinical history of the disease, the cardinal facts in the origin of which are :

1st.—The disease is the immediate result of more or less severe muscular exertion. Some authors, it is true, merely say that such muscular activity *generally* precedes the attack, but it may safely be said to *always* be the case.

To accomplish this muscular exertion, the animal need not but generally does leave the stall. It may be brought about in the stall by the animal becoming cast, or by anything which may cause sudden muscular excitement.

2d.—This exertion must take place after a rest extending

over an indefinite period of at least about twenty-four hours, and must be during this time, as near as possible, complete; that is, the animal must be so confined that it would or could not make any marked amount of muscular exertion.

A suitable subject for azoturia does not contract the disease at grass, and very rarely, if at all, when allowed the freedom of a spacious box stall, even though all other necessary conditions, as to food and care, be present, so that almost without exception, the animal affected with azoturia has been closely confined by the halter.

3d.—This period of rest must be of comparatively short duration, rarely exceeding five to ten days. If the animal is kept in the stall for a much greater time, its liability to contract, or rather possibility of, contracting azoturia ceases.

4th.—Prior to this period of rest, the animal must have enjoyed an active life, either at labor or unrestrained freedom; must have been of vigorous constitution, well-nourished on rich nitrogeneous food; in age not far from the prime of life, and the animal economy not subject to any considerable drain upon its resources. Thus we rarely see this malady in three-year-olds, and only in those of very early development, and possessing great vigor; still more rarely is it seen in aged horses which have begun to decline.

It is unknown in mares, suckling foals, and those far advanced in pregnancy.

These essential facts in the clinical history of the origin of azoturia are only partially brought out by most writers, one author laying special stress on one of them, while another notices particularly some other of the prominent facts, merely hinting at the remaining ones, or, in some cases, even denying them, thus creating much confusion; but we believe a careful study of the disease will prove the correctness of the foregoing propositions.

Much of the perplexity in the history of this disease is doubtless occasioned by confounding with and mistaking for azoturia other quite distinct diseases, especially spinal or cerebro-spinal meningitis and parturient eclampsia, in the differentiation of which the afore-mentioned cardinal points in the

history of azoturia will, if their correctness be admitted, serve as a valued guide.

Prof. Williams (Prin. Prac. Vet. Med.) says; "The pathology of the disease is, in my opinion, a hypernitrogenous condition of the blood and system generally, due to over-feeding and want of exercise. . . . It seems necessary that some degree of muscular exertion be performed, and the only way in which I can account for this is, that the blood, before exercise, contains a superabundant quantity of albumen, unappropriated by the tissues, and that the exercise, by increasing the rapidity of circulation and the respiratory movements, induces a rapid oxidation of such superabundant albumen, whereby it is transformed into urea, hippuric acid, etc., with which the blood becomes overloaded, and the kidneys stimulated to excrete what is proving deleterious."

This theory of origin, as we shall later have occasion to repeat, seems to us the most consistent of all, in so far as it goes, but it stops short of completion and fails to explain or suggest why the disease occurs uniformly very early in exercise, when, if the animal is severely worked, there is probably as much of these "oxidized albuminoids" in the blood after one or two hours of labor as before; nor does it make clear to us why an animal which has regularly been allowed an apparently trivial amount of regular exercise, which would in no way diminish the hyperalbuminosis, will not contract the disease, neither does it explain why in the early stage of the disease prompt quietude aborts the attack.

The late Prof. Robertson (Equine Med.) subscribed to the doctrine of hyperalbuminosis, and believed also that the pathological products of albuminoid decomposition begin to accumulate in the blood prior to exercise, so that, to his thinking, the pathological state antedates the muscular exertion. Beyond this he does not attempt to go, admitting that many phenomena of the disease are, as yet, unexplained.

His belief that the pathological changes exist prior to exercise is strongly denied by clinical experience, since muscular exertion is uniformly an essential factor in the origin of the disease.

His theory leads him to adopt a line of therapeutical action which clinical observation and even his own words condemn.

Advising in all cases a brisk aloetic purge in the first stages, he practically consigns his severe cases to death, while in those mild cases, where the horse is still able to stand, and where rest and quietude, without medication, constitutes a practical specific, his drastic purge, based upon his theory of the pathology, leads him to remark that "so long as the animal is able to stand, though unable to execute any movement, there is always some prospect for recovery."

The ideas of other English writers vary greatly, but cannot be reviewed here, and German writers are evidently no more nearly agreed. Bollinger terms the disease "toxaemic haemoglobinuria, due to auto-intoxication, resulting from the action of cold or exercise, forming a toxic ferment which destroys the red blood corpuscles and leads to haemoglobinuria."

Fröhner rejects Bollinger's views in the main, and adopts the name "rheumatic haemoglobinaemia," due to "taking cold," and resulting mainly in a primary inflammation of the posterior muscles, leading to a disintegration of the coloring matter of the muscles (identical with haemoglobin) and its passage into the blood.

Dieckerhoff believes the affection to be an acute constitutional malady, evidenced by severe parenchymatons, myositis, and proposes the name "lumbago gravis," the latter term being indicative of the very grave nature of the disease, viewed from his clinical observation under that therapeutical management suggested by his view of its nature. Like many others, he suspects the existence in the hypernitrogenous blood of a toxic ferment.

Further reference to the diverse views of many writers would only add to the number of theories, without adding to or detracting from any one.

It is a well recognized fact that in those diseases whose pathology and etiology have been satisfactorily determined, there always exists a reasonably perfect harmony between the

clinical history and the pathology ; so much so, that with one quantity known, the other is promptly suspected or admitted.

The co-habitation of tuberculous with healthy animals is followed by extension of the disease ; its contagiousness is admitted, the existence of a specific virus assumed, and the microscope reveals tubercle bacilli. Again, a disease may be assumed to be contagious when some special form of bacillus is recognized as an essential factor in the disease, and experimental inoculation or extensive clinical observations support such a conclusion ; so a careful study of the preparatory and clinical history and symptoms of azoturia should suggest something as to its real pathology.

The history of fit subjects for azoturia, their age, evident healthy, vigorous constitution, rich, healthful food and general management, all warrant us in assuming, as most writers claim, that the blood is the essential theater of the pathological changes ; and hence we may turn to a study of this tissue with strong hopes of learning the essential conditions in the production of the phenomena of this disease, and we are led to enquire, what changes are effected in the blood by that kind of feeding and management which leads to azoturia.

First, it has been shown by Panum, Dennis and Pozziale, that the blood of animals at the age when horses are subject to azoturia, that is, in middle life, contains a markedly greater proportion of solids, especially of red corpuscles, and less water and salts, than animals either younger or older, except perhaps newly born animals.

Andral and Tavanet have next shown that the strongest animals of a given species (and only these are subject to azoturia), show quite uniformly the largest proportion of red blood globules.

In such animals it has been shown that by a change from hard labor with bad food, to lighter labor or rest, with diminished respiration and richer albuminoid food, we produce a well marked further advance in the hyperalbuminotic condition, the blood, in such cases, attaining its maximum physiological amount of albumen and other solids, after a comparatively short period of rest, these constituents declining again with

prolonged rest ; and parallel with this prolongation of rest and decline of albumen, the susceptibility of the horse to azoturia retrogrades and finally ceases.

This hyperalbuminosis is accepted by some as the one essential factor in the production of the disease, but this doctrine is opposed by the clinical fact that this absolute plethora may and does exist, without in any case producing the disease except in conjunction with muscular exertion.

Consequently, while accepting the theory of hyperalbuminosis as the first essential factor in the causation of azoturia, there yet remain for explanation other phenomena in the clinical history of the disease and we are led to inquire why muscular exertion is necessary in the development of the pathological condition, and what changes are produced in the animal economy, especially in the blood, by this sudden exertion.

Those pathologists relying wholly upon the theory of hyperalbuminosis to explain all the phenomena, resort to various means. Thus Prof. Williams suggests the rapid oxidation of albuminoids upon exertion, with a resultant surcharging of the blood with uric, hippuric acid, &c., yet he fails to explain why animals sparingly exercised and doubtless as truly hyperalbuminotic as any, yet do not contract azoturia when suddenly put to severe exertion.

Dieckerhoff claims the development, through the agency of muscular effort, of a toxic ferment which pre-exists in the blood, but the careful observer must admit that, up to the moment of attack, the subject bears every possible evidence of typical health. That prompt quietude in the early stages of the disease affords equally prompt relief, while, were a toxic ferment present it would not cease to act with cessation of exercise ; and moreover, muscular exertion would not likely be essential to its awakening and development ; and further, careful light exercise for a few hours prior to hard labor constitutes an invincible guard against the disease, about the animals subject to it, although such light preliminary exertion could by no known means destroy an existing toxic ferment.

In searching for the remaining essential factors in the

development of the disease, some turn to the kidneys, others to the liver and others again to the spinal cord, but the history, symptoms and morbid anatomy of azoturia do not correspond with the phenomena we would expect to find in diseases of any of these organs, and so we must continue our study of the changes in the blood.

Parallel and in inverse ratio to the variation of albuminoids in the blood, we find changes in its water, so that after a comparatively brief rest, under the same conditions producing hyperalbuminosis, we find a well marked diminution of the amount of water in the blood; while on the other hand, poor feeding with prolonged labor, or a period of rest extending beyond the attainment of the maximum amount of the albuminoids in the blood, the water again increases, so that up to the moment of an attack of azoturia we find that the animal has been subjected to such conditions as to produce the maximum amount of albuminoids and the minimum of water in the blood and tissues, compatible with health, and that any augmentation of either of these strained physiological states produces at once a pathological condition.

We must next inquire what changes are brought about in the blood by the final chapter in the production of azoturia—the sudden and more or less severe muscular exertion—and we find according to experiments that the most notable change for a brief time, is a well marked further diminution in the water and increase in the solid constituents—owing mainly to the sudden accumulation of large quantities of tissue waste, the result of muscular exertion—before additional water can be drawn from other organs to restore the normal humidity, leaving the blood too concentrated to properly perform its functions, the red globules in part even perishing.

Thus a study of the history of azoturia suggests as to its etiology three essential factors.

1st. An increase of the solid constituents of the blood, principally albumen, to the maximum physiological limit.

2d. A corresponding decrease in the water of the blood and other tissues to the minimum amount compatible with health—a real quantitative and qualitative plethora.



3d. A further increase of the solid constituents of the blood from the accumulation in it of the products of tissue waste, the result of muscular exertion, and a still further deprivation of water concentrating the blood to an extent which can no longer be regarded as physiological but as essentially pathological.

A careful study of the symptoms suggests a very similar condition to that outlined.

The evident vigor of constitution, the powerful muscular development, the want of excessive fat and the remarkable show of eagerness and strength just prior to the attack of azoturia, is strongly suggestive of hyperalbuminosis.

The absence in animals subject to azoturia of œdematous (hydrœmic) swellings of the limbs, lower parts of belly, sheath, &c., so common in animals at rest, not subject to the disease, constitutes strong evidence of the decrease in the humidity of the blood.

Finally, when sudden muscular exertion changes the condition from a physiological to a pathological state, the morbid symptoms are in many respects closely allied to the symptoms produced by sudden blood concentration and loss of its humidity, as is observed in the cramp and muscular spasms, in severe hemorrhages, in certain stages of cholera, and more rarely in severe drastic purgation.

The highly colored urine, with its contained haemoglobin urea, uric and hippuric acids, is strongly suggestive of the destruction of the red blood globules, perhaps also of the muscle corpuscles; and their conversion into these less complex bodies can in no way be more surely and promptly brought about than by suddenly withdrawing from the blood and other tissues an amount of water beyond the physiological limit, as this excessive concentration and dryness means blood stasis; and unless the humidity is quickly restored, they point to destruction of the red globules or of the similar muscle elements.

Remembering, as has been demonstrated, that the quantity of blood in muscular tissue, during severe work, is increased by about eighty per cent. over the amount contained in a

state of rest, we can understand by the suggested theory why the great muscles of the loins and hips which supply the principal power in locomotion should usually present the first and most pronounced evidence of disease; the sudden drain upon the already deficient water supply in the muscular tissues and in the greatly augmented amount of blood supplied to these muscles quickly leading to blood stasis, extravasations, muscular cramps, succeeded by paralysis, destruction of the red globules, the excretion of their waste products in the urine and the peculiar tense swellings of the muscles involved.

Such a view of azoturia affords us a safe guide to prevention, viz: regular daily exercise or well marked diminution in the amount of food during rest. It also offers us—what clinical observation has proven the most successful means of treatment in the earlier stages before the animal has gone down—prompt quietude and rest for two or three hours constitutes well nigh a specific, and the same line of treatment, rest, quietude, without medication or handling calculated to irritate or annoy the animal or to interfere with the normal action of any organ or organs, until the blood by drawing on other tissues, has regained its normal humidity.

This doctrine condemns the use of slings as tending to increase muscular effort and contraindicates the employment of drastic purgatives, which cause an additional serious drain upon the water of the blood and tissues. One writer, advising slings and cathartics, remarks that with such treatment the animal, which remains standing, has a fair chance for recovery, while the condition of the recumbent case is very grave. While against this doleful prognosis, cases treated upon the line indicated by our theory assume a more cheerful prophecy, the recumbent cases largely—the standing cases practically all—making very prompt recoveries, and this largely in proportion to our ability to enforce in the earlier stages the injunction of rest and comfort.

To this end, sinapisms, blisters, uncomfortably hot or irritating applications of any kind to the loins, hips or other parts of the body in the early stages, cannot be too highly condemned,

and a long series of clinical observations fully uphold this judgment.

Even the passing of the catheter in a nervous, irritable animal, especially a stallion or gelding, would, according to our views, be wrong in the earlier stages of the disease, and this too is supported by clinical facts, we having once attended an irritable gelding in the earlier stages of a mild attack of azoturia, the animal perfectly able to stand and walk, which on attempting to withdraw the penis from sheath in order to pass the catheter, became so badly agitated in resisting our efforts that the disease increased in violence to a serious extent, the animal falling to the floor, unable to rise for some time; when, had he been let alone, he would have urinated naturally in a short time or after the lapse of a few hours, the catheter could have been passed with perfect safety and equal efficacy.

These views as to the pathology of this peculiar disease are not submitted as incontestable facts, but we believe they possess sufficient harmony with the history, symptoms, therapeutics, course and termination, as to invite careful study in this direction, with a view to arriving at the true pathological doctrine upon which the veterinary profession as a body can heartily unite.

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## SURGERY IN FISTULA—PIPE OR REED?

By S. MYLNE, V.S.

A paper read before the joint meeting of the Indiana and Illinois Veterinary Medical Associations.

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A solution of continuity of greater or less depth and sinuosity, the opening of which is narrow and the disease kept up by an altered texture of parts, so that it is not disposed to heal. It is lined throughout its whole course by a membrane analogous to mucous membrane.

A fistula is said to be either *complete* or *incomplete*.

*Complete* when there are two openings, one external, the other communicating with an internal cavity.

*Incomplete* or blind, with but one opening, which may be either external or internal.

External incomplete fistula is kept up by caries or necrosis of bones, by extraneous bodies in any of the living textures, or by purulent cavities, the walls of which have not become united.

The *great object of treatment* in fistulous sores is to bring on an altered condition of the parieties of the canal by astringent or stimulating injections, the knife, pressure, etc.; in those dependent on diseased bone, by exfoliation of the morbid part.

*Distribution*.—Caries of teeth—shot, the parotid duct, lachrymal fistula, ear, poll evil, withers, quittor, scrotum, fistula in ano (dog), fistula in teat, vesico-vaginal fistula, fistulous umbilical hernia.

A fistula is liable to be produced in any part of the body from numerous causes such as, “blows and injuries to bones, entrance of extraneous bodies, formation of pus.”—(Williams).

When pus is seated in parts, the action of which is defective owing to local or general causes, or when it cannot be completely evacuated, the cavity that remains does not contract completely, and the wound is called a sinus or fistula.

*Fistula*, of whatever kind, presents to the young practitioner or, for that matter, the veteran, a case which in the majority of instances tendeth to give him ample field for plying his experience, his knowledge, and too frequently a thankless and expensive operation.

In all cases have your patient under personal observation, where you can note the changes which take place towards a successful termination or *vice versa*. This is most imperative, else you become disheartened, disgusted, and your client wavers in his estimation of your ability to cope with the trouble. In all cases state exactly length of time necessary to a complete cure, more or less, circumstances altering cases. The cost should be so much per day, with medicine extra, or so much for curing, etc.

The great advantage of surgery over other modes of treatment are these:

1. If a pus cavity is readily evacuated by aspirator, trocar and canula or knife.

2. The pipe can be dissected out and escherotics applied to terminal pipes.

3. A more dependent opening can be secured.

4. The wound, a portion of which or all (if a dependent opening is secured) can be healed by first intention.

5. The usual mode of healing is by granulation.

6. Antiseptic treatment in all cases is of primary importance and absolutely necessary to a successful termination.

7. Local anæsthesia is indicative of a humane, intelligent and progressive veterinarian.

8. By removal of the cause the effects cease.

In treating sinuses the objects are to promote granulating action on their surfaces, and to press their sides together. They are not healed by filling up, any more than the original cavity of the abscess, but contract until they become obliterated or close more directly by union of their opposite sides.

The presence of pus being indicated by the swelling, heat, pain, etc., by manipulating you determine by compressing the skin and fluctuation with a small searcher or trocar and canula; after applying a twitch to the nose, you puncture the skin and ascertain the contents of the abscess, or a sinus may be present and matter exuding therefrom, the hair in its immediate vicinity being matted and wet.

Before operating it is necessary to thoroughly wash with tepid water and soap and a scrubbing brush, used carefully, all around the proposed wound; after drying, clip away the hair; this keeps the hair from becoming matted with the accumulation of debris of diseased tissue, etc. The kind of wound necessitates at all times that the animal should be under complete control and in a position most suitable for operating. All instruments, needles, sutures and whatever the operator deems essential to a successful termination, must be aseptic; antiseptic sponges, dressings and washes must be convenient and ready to handle.

*Anæsthetics* of whatever kind, whether general or local, are indicated in major or minor surgery. It is so in the human practice; why otherwise in ours? Cocaine in a 4 or 6 per cent. solution will be found sufficient, and if injected hypo-

dermically in several places in direction of proposed cutting.

*Antiseptic.*—Treatment for hands and instruments use 3 per cent. solution carbolic acid.

*Sponges.*—1. Beat to rid of all sand. 2. Wash in warm water till clean and unclosed. 3. Put into 5 per cent. sal carbolic acid which is changed every second day till eighth. 4. Then boiled for fifteen minutes in a solution of bicarbonate of soda. 5. Keep in a 5 per cent. solution of carbolic acid till wanted.

Everything being ready, proceed by first securing the animal whether by twitch alone, stocks or side lines, also considering the position best suited for performing operation. Before casting or securing, *detail your assistants*; the injection of local or other anæsthetic is now in order, and when sufficient time has elapsed, say five minutes, always if practical cut in direction of the natural lie of the hair (if possible), as when altogether healed the scar, if any, will be quite undetectable.

*Modus operandi.*—This is quite practicable when you have simply an abscess. First insert your director into sinus and with a strong scapel or probe-pointed bistoury lay open freely; your grasp of the knife must be firm and rigid and your arm steady. *Stop all bleeding* by properly ligaturing and artery forceps when readily applied. *Syringe* out with gentle force with antiseptic solution, which may be cold, to constringe vessels. The depth and extent of the cavity can be judged and direction of all sinuses; if cut was of a free nature to allow of sufficient dependence, proceed to dissect out pirgenic membrane; this may have been extensive and involve much cutting; if so, conserve tendinous or belly part of muscles and cut longitudinally, but get to the bottom of the trouble else failure will be yours.

*Escharotics*, as nitrate of silver, arsenic, etc., can be applied to terminal pipes, especially so where cutting would be dangerous. I have found that the application of a large, soft emollient poultice, with free sedative spraying, which is very soothing, that the warmth and moisture have increased the healthy granulation and the remaining pipes were readily detached, especially so when the most dependent parts were

treated with caustics. The after-treatment consisted of oiling the hair immediately below the wound to protect the hair and skin, and keep clean; your removal of the cause, and having a dependent opening, will ensure a speedy cure.

The usual application of powerful caustics to fistulous affections to destroy the secreting membrane, consists of the following, and every quack and would-be horseman has his favorites: Glacial acetic acid, corrosive sublimate, carbolic acid, nitric. Hd. Hz. and  $\text{So}_4$  agnoz., chloride of antimony, caustic soda and potash, etc.; all are exceedingly heroic treatment. The pain and suffering caused by these very powerful agents is most intense, and quite opposed to rules governing modern surgery, granted that these fistulas can be cured by use of these escharotics, provided that by extensive sloughing the dependent part enables the escape of accumulated pus and debris.

The amount of sloughing, creasing, and wasting of muscles is a standing discredit to the qualified practitioner, bordering on the ignorant charlatan, who has cured some minor cases, no doubt, and aspires to combat all diseases of the lower animals. His treatment is as follows: Secure your horse to a tree where there is no possibility of escape, and pour in from a safe distance boiling oil or solution of salt, lye, acids, and the hotter the better; all is ready to adopt any or all suggested nostrums, and one application is sufficient to make the horse frantic, dangerous to approach, and will naturally fight for his life; this should be undisputable proof that it is not necessary to subject the poor animal to such an inhuman mode of treatment, and the Society for the Prevention of Cruelty to Animals should make an example of him.

*Mild astringents.*—By the application of mild astringent injections after the foreign body is removed, minor fistulous wounds (e. g.) those caused by twigs, shot, punctures, etc., are readily stimulated, and one of the finest is peroxide of hydrogen; this causes very little inconvenience, and causes the unhealthy tissue to ooze and foam, but does not affect healthy parts.

*Seton.*—The application of a seton is very frequently the

cause of extirpating the sinus, when dependent, and when smeared with some excitant.

*The actual cautery* is highly spoken of in quittor, by securing a dependent opening when the cause is a suppurating corn, to allow escape of matter, and mild injections will hasten a cure; (agnoz).

*Blistering* is lauded by some and in some cases might be successful; that is, in punctured wound in cœcum, and by absorption in early stages of injury might check.

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## COCAINE IN THE DIAGNOSIS OF LAMENESS.

By W. J. TORRANCE, V. S., Cleveland, Ohio.

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About three years ago, when I started to practice in Cleveland, I was astonished to find that several of the local veterinarians were performing neurotomy upon equines in the standing posture, by the simple use of hydrochlorate of cocaine. I decided that I was about to trot in fast company, and that I must speed with modern appliances. The use of cocaine upon large nerve trunks was then new to me; having, however, used it quite extensively since that time, I shall briefly relate a few of the cases where it proved of interest to me.

The first subject for trial was a case of chronic lameness in a fore limb, in which no appreciable changes in the anatomy of the limb were present by which to positively locate the affection. Some authorities claimed this a case of shoulder lameness. I injected along each metacarpal nerve one and one-half drachms of a five per cent. solution of cocaine, and ten minutes later led the horse out to be cast for operation. He, however, did not walk lame; so I trotted him every ten minutes, and was surprised to find that for one hour he positively refused to *limp*, and then in the course of a few minutes he became painfully lame again. I neurotomized the limb and the operation proved a success.

I now surmised, firstly, that I had a "dope" for lame horses; secondly, that I had a positive test for many obscure lamenesses.



A horse was brought to me "quarter-sore," and for sale. Cocaine along his metacarpal nerves sent him away sound enough for all practical purposes.

Some time ago I owned a spavined pacer, and a Jew came to trade for him. He disputed the horse's age and found many faults which were not present. I offered to lead the animal out to let him see him move; but he said he knew more about a horse than I did, and would not have the horse. He promised, however, to come the next morning if he could do no better. Now the horse was lame on the spavin, and I intended to dispose of him cheaply and honestly, but thought that one lesson on the action of cocaine would do the impudent Jew no harm. Next morning I injected cocaine freely around the seat of the spavin, which was low, and when the Jew came, he paced so well to balks that I succeeded in disposing of him. That afternoon the old pacer was painfully lame again.

Yesterday I was called to see a fast horse, lame in a fore limb. The location was disputed by two other veterinarians, and I was summoned to cast the deciding vote. Upon seeing the animal move and manipulating all parts of the limb, I located the lameness in the lateral ligaments of the pastern joint. The owner asked me, "Can you prove that this horse is not shoulder-lame?" I answered "Yes, sir," and at once applied the cocaine test. In eight minutes the animal went sound, and continued to do so for one hour and twenty minutes.

Last winter I was called to see a horse with an obscure chronic lameness.

*History.*—A chestnut gelding, six years, sixteen hands and high-bred, was shipped by rail from Kentucky fourteen months previous, and got off the car in Cleveland lame in the off fore limb. He was positively never lame before in his life.

Almost all the leading veterinarians in this and other large cities located the lameness in the shoulder, and before I saw the animal he had been fired, blistered, setoned, etc., etc., at every point from the pastern to the withers, and still staid lame, excepting that occasionally he would go sound enough

to hook to a cart, and then would suddenly fall dead lame after going about a mile.

*Symptoms.*—No heat in any part of limb, would never point over two inches, if at all, never raised the heels, straightened his pastern, or relaxed his fetlock, but at times held the foot slightly outwards; was sound on a very slow walk, and painfully lame on a trot, especially down hill or in a circle; hard or soft ground did not affect the lameness. He would stand upon the lame limb alone without indicating pain; would lift the foot in backing, and had no symptoms of "circumscribed hepatitis." The gait was an adduction of the elbow with the greatest amount of "inside circumduction" of the lower limb in advancement that I ever witnessed. The feet were uniform in all their measurements and angles, and devoid of heat or tenderness, no matter how or how often tested. There was always a quivering of the panniculus along the inner border of the coraco-radials (perhaps due to previous treatment) and an increased sensitiveness to the electrical current.

I ventured to locate the lameness in the pectoral muscles, and could in no other way account for the extreme amount of inside circumduction in progression. During fourteen months the muscles of the limb had not wasted appreciably, and no manner of flexion and extension would yield positive results.

After treating the animal with firing, blistering, escharotic and vessicant setons, etc., etc., with long rest, he trotted sound for about a week, and then suddenly went dead lame again, when I gave him up as a "gone goose."

During this time I had told the owner about the "cocaine test," but thought it foolish to try it upon so sure a case of shoulder-lameness as this. The horse staid lame and got worse, and the owner coaxed me to try the "cocaine test" before killing the animal. I did so reluctantly, and eight minutes after injecting it he trotted sound under all tests, and continued to do so for an hour and a half.

I neurotomized the limb that afternoon, sent the horse home sound gaited, and he stays that way.

Thus it will seem that an injection of cocaine decides in eight minutes the fate of an animal for eighteen months pain-

fully lame, with a defect so obscure that it had "tripped" the veterinary talent of this district.

With your kind permission, Mr. Editor, I shall continue to discuss the subject at some future date.

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## THE DISINFECTION OF HORSE-SPONGES.

Translated from the German by RICHARD MIDDLETON, D.V.S.

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It is known that the use of sponges for cleaning and therapeutical purposes may give rise to various unpleasant consequences. Since impurities, infectious material, secretions and exudates, either dilute or tenacious, readily acquire a grasp upon the sponge texture, such have often enough given occasion to the transportation of infectious diseases. This danger is rife, especially in the stables of omnibus and street car companies, where it is customary to wash the nasal openings after a tour, or in the summer time. From using one and the same sponge, the latter becomes over-inoculated with the principle of glanders, rhino-adenitis, stomatitis contagiosa, etc. After two Italian veterinarians, Rabbaglietti and Diana, had earlier called attention to the loss in the Italian army from this cause, Baruchello undertook a bacteriological investigation upon horse sponges, and in a subsequent treatise acknowledged the detriment, with a practical proposition for the judicious disinfection of such sponges. It had been suggested that a separate sponge be kept for each animal, and not allowed to be interchanged. The subject has lately been still further developed, and now it is proposed to periodically disinfect the stagnant sponges, and especially so to do during epidemic diseases. Baruchello has suggested a more feasible method. He took from the soldiers of several squadrons, worn-out sponges and pieces, as they came to hand, and from these he cut cubes of one centimeter each. These he put in reagent glasses with fluid gelatine as a culture food. After thorough shaking, so as to remove the adhering germs, these cubes were removed. Esmarck's method of "flat roll cultures" was used. The method consists in stopping the tubes

with sterilized wadding and a rubber cap, and then, in a horizontal position, twisting it under a stream of water until the gelatine becomes evenly fixed upon the sides of the tube and solid. Baruchello demonstrated that new sponges washed in sterilized water also developed colonies of bacteria, though very few. With the room at a temperature of  $65^{\circ}$  to  $77^{\circ}$  F., a multitude of colonies began to show themselves in twenty-four hours, and the gelatine to assume the fluid state. On the second day after inoculation, Baruchello counted the colonies in a square centimeter. From one very dirty sponge 23,866; from three moderately dirty, 7,534, 10,896, 6,312; from two well-washed in sterilized water, 128 and 147; from two new sponges, 32 and 40; and from one new sponge washed in sterilized water, six bacterial colonies were counted. A few minutes heating at  $189.5^{\circ}$  F. was sufficient to kill most of the spores; after this, however, there developed other colonies; this pointed to a species which was extraordinarily hardy. After these experiments, Baruchello commenced the search for a suitable disinfectant; this must be of a character to destroy all microphytes and their spores; it must be at once simple, convenient, cheap, practical and not dangerous to use, or ruinous to the sponges. It has been known that dirty pieces of sponges containing the bacilli of anthrax and glanders were rendered sterile by boiling five minutes in water. In this process, however, the elasticity and porosity of the same were materially affected. Consequent upon this came a selection from the various chemicals of disinfecting value; the choice fell upon a solution of corrosive sublimate, 2-1000, mixed with a solution of acid hydrochlor. 5-1000, which is the solution of Canalis (for the disinfecting of railroad cars). The experiments of Laplace upon the disinfecting energy of the sublimate, determine the fact that this was greatest when combined with an acid. (Phenic may be used). The acid not only facilitates solution, but the subsequent decomposition when subjected to the light, Laplace has found that 0.5 cc. of blood serum from the ox was sufficient to annul the disinfecting power of the sublimate, because of the resulting decomposition of the latter. The foregoing investigations

also developed the fact that sponges washed with water alone, held, thereafter, fewer germs. Baruchello, in testing the power of the corrosive-hydrocholic mixture, showed that pieces of sponges left in this solution for two hours, and afterward placed in the culture glasses, gave absolutely no colonies. He recommends that the sponges be washed with water and then thrown in the above mixture, which is to be kept in a tub; they are allowed to remain therein until needed. This mixture is cheap; the sponges are not ruined thereby; there is no danger of poisoning or infection to man or horse, provided that the liquid be not imbibed; the sponges are always sterile.

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## ANTIRABIC INOCULATIONS.

MECHANISM OF IMMUNITY. SENSATIONS PRODUCED BY  
THE ANTI-HYDROPHOBIC PASTEUR INOCULATIONS, AS  
DESCRIBED BY INOCULATED SUBJECTS.\*

BY PAUL GIBIER, M.D., Director of the New York Pasteur Institute.

More than ten thousand people have been inoculated during the five years in which the Pasteurian inoculations have been practiced. Among the number were a few doctors; nevertheless there does not, so far as my knowledge goes, exist any detailed narrative of the phenomena noticed in those who were submitted to the preventive treatment for rabies after having been bitten. I have therefore thought that it would prove interesting for the study of immunity in general, and as a contribution to the history of this system of treatment in particular, to make known some of my observations.

Following in the steps of several doctors—either directors or assistants in antirabic institutions—who did so to ward against a possible accidental inoculation during their daily manipulations of virulent matter—I inoculated myself as well as two of my assistants. A young lad attached to the laboratory was likewise inoculated. But I must here and at once

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\* A paper read before the N. Y. County Medical Association, May, 1890.

make the following remark, that whereas the lad complained only of local sensibility, of fatigue, and of a little nocturnal agitation, we, who are more accustomed to observations, made several which I think are worthy of record.

The series of inoculations which I practiced on myself and on my two aids began March 27, 1890, with matter of the 14th day, and ended on the 10th of April following, with the matter of the second day.

The subcutaneous injections of the first four days were followed by a slight irritation, which in one of us extended as far as the redness of the tegumentum *in loco*, but without induration. During the night sleep was somewhat disturbed by the sensitiveness of the lateral part of the lumbar region, viz., at the spot of the inoculation. During the first ten days the symptoms were about the same. The temperature of the body rose slightly, but it cannot be said whether this slight febrile motion was caused through and by the injected matter, or whether it was the result of the slight inflammation caused by the injection itself. Those symptoms were considerably modified by hot baths of lengthy duration. Towards the tenth day the tissues seem to have accustomed themselves to the injected liquid; the reaction was less acute, the pain decreased, and three days after the last injection there remained, so to speak, hardly any local trace of the fifteen injections made on each side.

Thus far I have not said anything to explain the working of the immunity, but I will now take up the subject. How, then, is immunity obtained? In a book I published last year (*Analyse des Choses*—Dentu, publisher, Paris), I propound a theory, which, according to my belief, may be of use to explain this hitherto mysterious property, common alike to men and to animals, of resisting the inroads of certain diseases when once attacked by them. In the living body, what is there that resists the development of the infectious figured element which has reached the body from the outside? Evidently it is the figured elements which make up that body; in other words, it is the living cell. For me, immunity is a phenomenon of cellular memory. The cellulæ are small in-

dividuals, beings endowed proportionately with the constituting principle of the living being such as we know it. As such they enjoy the faculty of memory, and each time that they are attacked by a malady they remember—automatically, if you like—but still they remember how they have gotten rid of the intruder (I mean the microbe) which attacked them, and when next assailed they know immediately what measures are necessary to prevent the enemy from retaining a hold on them.

I do not desire to dwell any farther on this theory. It is sufficient for my purpose to have indicated it. I will only remark that the recent work of Metchnikoff on the part played by the white globules in the case of inflammation produced by bacteria, certainly go to strengthen that theory. I will now try to show by means of the three cases that I am about to analyze, that rabies, which is a malady affecting the nervous centers, is no exception to this rule.

In order that the nervous centers be protected against a mortal attack of rabies, it is necessary, in order to forestall the progress of the microbe, that other microbes of the same species, but attenuated, should be placed in contact with the cells of the spinal cord and of the brain. Let me make the passing remark, that the first subcutaneous injections are made with matter, the prolonged desiccation of which has caused its virulence to disappear, but it is not unreasonable to admit that the nervous cell must be influenced, in a measure, by the ptomaines secreted by the hydrophobic microbe and that this reasonably gives it a certain degree of power to resist (through being accustomed to its secretion) the attack of microbes, at first weak, then more and more virulent when introduced by the successive injections. When, after having followed (as shown by experience) the nervous fibres, which from the bitten spot go to the cord and to the brain, the infectious germ reaches the nervous cells of the cerebro-spinal axis, it finds them prepared, hardened to its attacks and it can do them no injury. Such is immunity.

What goes to demonstrate that during antirabic inoculations things take place as I have just described, is that my

two assistants and myself experienced, during and after the inoculations, a series of phenomena indicating that certain departments of the nervous system were stimulated into activity by some unusual excitement.

For my part, during the days when I took the last inoculations, and a few days after, I observed a greater activity of the salivary glands. Several times a day I felt saliva welling from the sub-maxillary glands and from the parotid canals, my mouth filled with saliva and I was obliged to eject it. During the night I was obliged to urinate, which is not my usual custom. These symptoms were the same in the case of my assistants, which evidently shows a sign of excitation of the medulla oblongata.

I recall that in 1884, in a pamphlet on hydrophobia\* I have shown that *polyuria* was a frequent symptom of rabbits inoculated with the virus of hydrophobia, at the moment their nervous system was invaded by the germ.

During the last week of the treatment, and the week following, I felt a certain heaviness of the head and an inability to work. These symptoms were experienced by Messrs. Roger and de Monchy, with these additional ones: on the fifth day (inoculated with the marrow of the sixth day) Mr. Roger complained of a sudden pain in his right side, lasting about half an hour. On the eighth day (inoculated with the matter of the fourth day) he experienced dizziness which lasted intermittently for fifteen days. The twelfth day he felt pain in the lumbar region, extending as far as the right testicle. On the fourteenth day the vertigo continued, accompanied by buzzing in the ears, which rendered walking difficult. But since this treatment Mr. Roger assures me that he has been relieved of a chronic dyspepsia accompanied by pyrosis. The alvine functions are also more regular.

Mr. de Monchy was more affected by nervous troubles. From the second injection he felt pains in the nape of the neck; on the fifth day this pain spread into the brachial plexuses. After the ninth inoculation some fulgurating pains

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\* Recherches sur le rage et sur son traitement.—Asselin & Honzeau, Paris.



were experienced in the region of the left crural nerve. On the twelfth day he suffered a frontal cephalalgia and an exacerbation of the pains at the nape of the neck. These symptoms continued for about fifteen days after the treatment, accompanied by an unusual sexual excitement, sadness, undefined preoccupation and unlocalized pains. The appetite was always good.

Finally, Messrs. Roger and de Monchy were affected on or about the fifteenth day following the last inoculation by pains in the spots where the injections were made. These pains were so acute as to suddenly awaken them in the middle of the night. I call attention to this last fact because in one case, when a person inoculated died of hydrophobia in spite of the treatment, the adversaries of the Pasteur method took advantage of this fact, that the patient had complained of suffering at the spots of the inoculations, to pretend that hydrophobia had been communicated to him by these inoculations. One sees, however, that these injections are able to cause acute pains some time after they have been made, without determining hydrophobia.

To-day, the nineteenth of May, nearly a month and a half after the last inoculation, we are all three in a state of health as satisfactory as possible. I will add that the sixteen persons who had been inoculated at the New York Pasteur Institute in the two months following its opening, are enjoying good health, whilst several domestic animals, bitten by the same dogs that attacked several of these patients, have died of hydrophobia. A man bitten by one of these dogs and not treated at the Institute has also died of hydrophobia.

I am happy to make known these facts, and I shall be still happier if, by the application of the method of my illustrious teacher, Mr. Pasteur—the method which is so successful in Europe—I am able, on this side of the Atlantic, to preserve the greatest number of persons possible from the frightful death which is the consequence of hydrophobia.

## REPORTS OF CASES.

*“Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science.”*—VETERINARY RECORD.

AMERICAN VETERINARY COLLEGE—HOSPITAL DEPARTMENT.

THORACIC LYMPHANOMA—EXTERNAL CERVICAL AND PECTORAL  
ŒDEMA.

BY W. LABAW, D.V.S., House Surgeon.

The subject of this report was a roan gelding, about 12 years old. When admitted to the hospital he was merely reported as having been sick for the last two days, and eating but very little. The symptoms exhibited at the time are thus noted: condition fairly good; respiratory movements accelerated, 30 in number; pulse 60, and rather weak; temperature 103°; mucous membrane slightly injected; auscultation and percussion showing a loss of respiratory murmur in the interior of both lungs, more marked on the left side. There was a large œdematous swelling in front of the chest, extending upwards near the trachelian cartilage of the sternum, thence under the chest, between the fore legs and behind the rear leg, where it projected backward from the elbow, extending somewhat on the left side of the chest. There was also an œdematous swelling in the jugular groove, and on the inferior border of the neck, soft and pitting on pressure. The appetite was comparatively poor. A diagnosis of double pneumonia was made, though from the general condition of the patient there seemed no good ground for serious apprehension or doubt as to the result, and a favorable prognosis was given. The animal having the advantage of good hygienic surroundings, was placed under stimulants internally with the application of an oil silk jacket externally, and the administration of diuretics to stimulate the restriction of the diseased lungs, as well as to promote the absorption of the œdematous swelling of the chest and neck.

This treatment was continued for about two weeks, but failed to produce any important change in the symptoms, for though the pulse and the temperature had returned to their normal rate, the appetite was still delicate, the external appearance of the swellings remained about the same and the respiration was still disturbed, being at times accelerated and labored, though at others quite normal.

Examination of the lungs showed no change. There was the same loss of respiratory murmur, which if not completely absent, was at least very weak and had the same dulness on percussion. The condition of the lung was evidently due to a passive rather than to an active pathological condition. Was there heart disturbances; was there structural changes; or to what must the trouble be referred? The administration of heart regulators was then ordered, and digitalis and nitrate of potash, with a view to their diuretic effects, were both administered for several days, but with no other result than a disturbance in the character of the pulse, which soon rose from  $42^{\circ}$  to  $60^{\circ}$ . Exercise was then tried, but the slightest exertion was followed by extreme fatigue, the respiration becoming greatly accelerated and the breathing of heaves to an extreme degree becoming manifest, and suffocation soon threatening. After four weeks of treatment, without any manifestation of change, the owner ordered the patient to be destroyed.

The post-mortem revealed the following lesions: The inferior portions of both lungs had collapsed, and were dark in color, the superior two-thirds normal; there was the extensive collection of yellowish fluid in the thoracic cavity, but no inflammation of the pleura and no pleuritic adhesions; the heart was normal in size and in structure; and the bronchial lymphatic glands were enormously enlarged, assuming the size of the fist of a man, and pressing upon the blood vessels at the base of the heart, principally upon the anterior vena cava and the pulmonary veins. The lymphatic enlargements were hard, and on section showed a large increase of the connective tissue, with here and there a caseous degeneration gathering in various spots in little suppurative masses.

OBSTRUCTION OF THE DUODENUM BY *ŒSTRUS EQUI*.

BY H. N. WALTER, V.S., Windom, Minnesota.

As a fatal termination from the presence of bots in the stomach of the horse seems a very rare occurrence, (Prof. Williams in his work on Equine Medicine, only referring to two cases) the following may be of some interest:

The patient was a two-year-old gelding, in rather poor condition. When first seen by me showed the following symptoms: Pulse about 60 and strong, breathing much accelerated, pawed incessantly, turning the head around and looking at his side as if suffering from colic. On every attempt to pass fœces groaned with agony, and when the rectum was emptied by hand a small amount of soft dung, with a very rotten odor, was found just anterior to the fundus of the bladder and immediately above the ureters, the pressure of the fingers in that locality causing acute pain and straining. Frequent attempts were made to urinate, what little was passed being highly colored and extremely viscid, very much resembling syrup. After twenty-four hours this urine deposited a thick sediment.

Treated with hypodermic injections of morphine, hot cloths to the loins, demulcent drinks and a laxative, the urgent symptoms would abate for about twelve hours and then return with renewed violence; the patient, in the interval, eating readily, and the pulse almost regaining its normal condition. For several days no fœces were passed voluntarily, and only very small pellets could be reached by the hand, but even these, by pressing on the fundus of the bladder, seemed to cause acute pain. On the fourth day a violent diarrhœa set in which lasted until the ninth day, when the pulse being almost imperceptible and pain intense, we put an end to his sufferings.

The post-mortem examination showed the large intestines united to each other and to the abdominal walls by numerous adhesions, the walls of the bladder enormously thickened, presenting a thick mass of tissue, pale yellow in color, and very friable. Before removing the stomach, I tied two pieces

of twine round the duodenum, one close to the pyloric orifice the other about three inches from it. On dividing the intestine between the ligatures, we found it simply full of bots, adhering to the mucous membrane in a solid mass and completely occluding the canal. The stomach itself only contained a few bots and these all attached round the pylorus.

As some might suppose that the bots had detached themselves after the death of their host and passed into the duodenum, I may mention that the post-mortem was made immediately after death, and that the bots were all still firmly attached to the mucous membrane.

I think there can be no doubt that in this case the whole of the structural changes noticed were due to the gradual, occlusion and perforation of the duodenum by the bots.

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#### GASTRIC FISTULA—TERMINATION.

By J. J. KRAUS, D.V.S., Cedarburg, Wis.

This lesion being so scarce, and literature on the subject unobtainable, a report of the following case which occurred in my practice in the fall of 1888 will be interesting to many of my professional brethren:

HISTORY.—Two or three weeks before I was called to see the case, a valuable Holstein, four years old, had been horned in the right flank, and thereby violently thrown on to a short stump, of the size of a man's wrist, causing quite a bad bruise, which in the course of ten or fourteen days developed into a large abscess, ruptured and discharged a large amount of very offensive pus, mixed with contents of the stomach.

The owner, upon seeing this, lost all hopes of recovery, and it was only through accidental coincidence with the same, on the evening of the third day after the rupture had taken place, that I was requested to attend to the case.

On examination, I found the patient languid, rapid emaciation, but little thirst and appetite, rumination almost entirely suspended, temperature 102 3-5, pulse 55; and on the infero-posterior border of the last rib (on the left side) a fistula of the size of a lead pencil discharging a very offensive material, consisting of pus and gastric-ingesta.

Being about dusk that evening, the operation had to be postponed until the next day, but owing to other urgent cases coming to hand, I could not see her until the second day thereafter.

At that time her temperature was  $104.1-5^{\circ}$ , pulse 74, and about six inches below the external orifice of the fistula a soft, fluctuating tumor had made its appearance, which upon pressure discharged the usual material. To operate, the patient was first cast on its right side, legs firmly tied, abdomen thoroughly cleansed with warm water, and the hair clipped as short as possible all around the orifice.

The instruments used, besides a sponge and carbolized catgut, were a scalpel, probe bistoury, artery forceps, hypodermic syringe and curved needle.

On probing the fistula, it was found to extend downwards between skin and abdominal wall to the bottom of the tumor above mentioned, where it pierced the abdominal wall.

This being opened, and the sac thoroughly cleaned, a probe bistoury was introduced down into the stomach, making an incision directly upwards about six inches. A similar incision was made from the same point backwards, giving a right-angled incision base and perpendicular six inches in length.

The included triangle thus produced being thrown backwards exposed the stomach to full view. At first, the hemorrhage was very profuse, but was soon controlled by cold water application. No blood could gravitate into the abdominal cavity on account of the rumen being firmly pressed against the edges of the wound, which (the rumen) owing to the abnormal position of the patient, had turned so much on its axis as to hide the fistula several inches above the upper border of the incision.

With hands and arms well oiled this was soon overcome by manipulating the organ and its contents.

The hole in the wall of the stomach was oval in shape, and large enough to admit the first and second phalanges of my index finger, its borders attenuated and slightly granulating. With a sharp scalpel I removed a small triangle at the lateral

borders of the opening, rendering it elliptical in shape, and about two inches long, the edges of which were easily brought into opposition with carbolized sutures, without puckering at the ends. This done, the entire wound was again thoroughly washed with a boracic acid lotion, and well-oiled with acid carbol., m. lx, ol olive, o. i.

The abdominal wall I sutured very firmly with strong wire sutures, and the skin, externally, with strong waxed-end.

About one-half of the wound healed by primary adhesion, and at the end of six weeks the cow yielded very near her usual quantity of milk, and was, seemingly, as healthy as ever.

For the first ten days I prescribed for internally, salicylic acid, 2 drachms; sulphate magnesia, 3 oz.; gentian po., 4 drachms—one dose twice daily. Soft, laxative and cooling diet, and as little as possible. Externally I used acid carbol, 1 drachm; ol. gossypium, o. i.

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### FRACTURE OF THE PENIS.

By C. F. MENNINGER, M.D., Topeka, Kansas.

It is not often that we are obliged to chronicle an accident of so peculiar a nature as fracture of the penis. The literature of the subject is very meagre, and we therefore feel that we find in the very scarcity of record a reason for this article. Some time about the 20th of this month, on a large stock farm near Denver, a valuable stallion, Richelieu, while in the act of covering a mare, sustained an injury to his penis. The injury was no doubt caused by striking it against the ischial protuberance, yet the attendant declares it to be due to the fact that the mare, being fractious, plunged and turned to one side. The penis was bent at nearly a right angle (the bend being situated at about the point of the sheath) and was deflected to the right side and twisted upon itself nearly one-fourth of its circumference. The sheath and prepuce soon became swollen. At no time was there any passage of blood with the urine, and there was but very little extravasation into the penis, nor much inflammation of it. The inflamed prepuce and sheath were skillfully restored to natural state in

a short time by hot fermentations and stimulating liniment, and the penis is gradually becoming more and more straight, and will, we believe, become so in a short time. It is our idea that the rupture involved the dense fibrous cylinder around the left cavernous body, with also a partial oblique rupture of the same. The form of this gap in the fibrous sheath and cavernous body when engorged with blood is wedge-shaped, and hence causes a flexion of the organ to the right.

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## EXTRACTS FROM FOREIGN JOURNALS.

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### TWO CASES OF TETANUS IN SWINE.

BY M. CLAVERIE.

TRAUMATIC TETANUS.—A pig exhibited the following symptoms: abdomen greatly enlarged, tense, and very painful; loins rigid and arched; occasional spasms, with—at comparatively frequent intervals—the expulsion of a very few drops of urine; eye dull; head erected and extended on the neck. The legs were very stiff, and were kept apart. Movement, which was very difficult, was accompanied by a painful cry. Two days previously he had exhibited tetanic symptoms, with difficulty of urination and defecation—he had been castrated about twelve days before. The animal died three days after the appearance of the symptoms which have been described. Nothing unusual was found at the post mortem, except that the bladder was largely distended with muddy urine, containing a large amount of mucus, and that the mucous membrane showed spots of a purplish red discoloration.

IDIOPATHIC TETANUS.—The second case occurred in the practice of the author a short time after the first, and afforded evidence of the comparatively not infrequent existence of the disease amongst swine. The symptoms were very similar to those which were present in the first case, the disease terminating in the same manner and in about the same length of time. No traumatism of any kind could be traced in this case as a producing cause, and the closest investigation failed, the author says, to justify the accusation of an equine origin for the trouble.—*Revue Veter.*



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FOREIGN BODY IN THE STOMACH OF A STEER—  
EXIT THROUGH THE THORAX.

BY M. A. BAU.

This case is interesting from its own peculiarity, from the result which followed, and from the length of time during which a bulky foreign body could remain in the thorax without giving rise to serious troubles. The patient was continually moaning, principally when at work or very tired, and nothing else abnormal being very noticeable, he had been subjected to a variety of experimental modes of treatment, including bleeding, mucilaginous injections, mustard on the chest, and opiates in drenches, without any apparently favorable results. One morning a swelling was detected in the lower part of the chest, in the form of a flattened, elongated, hard and quite painful tumor. An application of blistering ointment was made and rubbed in, but the swelling continued to grow, until at last fluctuation was detected at one point. It was then freely opened, and about a quart of brown-colored purulent serosity, of an exceedingly offensive odor, made its escape. The cavity was thoroughly washed and disinfected, but the swelling remained and showed but little change. A few days later another fluctuating spot was discovered, which, when it was punctured, was found to contain a large piece of iron, about ten inches in length, black and curved in form, and probably the tooth of a rake. From the moment this was extracted, the moaning of the animal ceased and a rapid recovery followed. It was somewhat later that an important point in the history of the case was learned, in the fact that this exhibition of symptoms in the suffering animal had existed at least a year, a circumstance which justifies the supposition that it had taken the same length of time for this foreign body to travel on its way out of the abdomen through the thorax.

—*Revue Veter.*

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ANASARCA IN A CALF—EMBRYOTOMY—RECOVERY.

BY M. LAMOUREUX.

This is an interesting case, in which it was estimated that following the division in utero of the foetus and accompanying

its extraction, not less than fifty quarts of fluid escaped from the dropsical foetal mass.

A young cow in her second pregnancy, due to calve twenty-eight days before, was observed to be unwell, and soon to exhibit expulsive efforts. Examination made by a practitioner revealed a posterior presentation and so peculiar a condition of the calf that he thought it best to recommend the transfer of the animal to the hands of the butcher. Mr. Lamoureux being called in counsel, found the cow in sterno costal decubitus, with a posterior presentation, lumbo pubic position, with the vaginal walls and the os extensively tumefied. Part of the hind legs having been pulled away, the hand being introduced into the vagina found the torn skin and muscles, and in front an œdematous cylindroid mass, covered by the skin, and without any palpable external projections. The enormous size of the infiltrated hind legs, filled with pale serosity, the œdematous feeling of the parts, with the length of the pregnancy, all suggested the diagnosis of anasarca. Embryotomy was then resorted to, and piece by piece, the foetus was divided and secured, or torn from the cavity. The muscles being filled with serosity seemed macerated in it. The abdominal organs were removed and scarifications were made through the fleshy parts, in order to allow the escape of a large quantity of fluid. The ribs were successively torn away, the vertebræ dissected and extracted, and when the head was removed, it was only after several scarifications had been made through its thickness. The entire operation occupied four hours. The subsequent treatment consisted in hygienic measures, hot sachets on the loins and chlorinated mucilaginous injections. Recovery took place in eight days.  
—*Rec. Med. Vet.*

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## OBITUARY.

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W. R. JENKINS.

It is with much regret that we announce to our friends the death of Mr. W. R. Jenkins, on the 16th June, after a long sickness. He had been attacked with a severe form of grippe,

which he rather neglected, and subsequently experienced an attack of rheumatism with heart complications, which terminated his sufferings. Mr. Jenkins was in his forty-third year, having been born in New York in 1848. In early life he was connected with a line of steamers, and subsequently engaged in the printing business. For several years he acted as dramatic critic for the *New York Herald* and *Evening Telegram*. After an extended trip in Europe, in 1878, he returned to New York to open a book store, where his true connection with our profession began. He worked for years to introduce a competent veterinary department in his business, satisfied that veterinary literature was destined to become an important branch of the publishing business. In this effort he was largely successful and had founded a house which we believe had become the veterinary publishing house of this continent. Many of our friends will regret to hear of the death of one who was almost one amongst ourselves, and who, by his affable deportment and pleasant manner, gained the friendship of all who knew him.

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## VETERINARY COLLEGE NOTES.

*Veterinary Department, University of Pennsylvania.*—The following twenty-two gentlemen have passed their final examinations and will receive their diplomas conferring the degree of *Veterinariæ Medicinæ Doctor* (V.M.D.), on June 5th: Harry Bannister, Philadelphia; Nathan A. Cohen, Philadelphia; Charles A. Dohan, Philadelphia; Harry L. Eddy, Minneapolis, Minn.; John M. Eshleman, Fagg's Manor, Pa.; John W. Harrigan, Philadelphia; Charles Rudolph Jolly,\* Philadelphia; Thomas J. Kean, Lock Haven, Pa.; Edgar H. Landes, Philadelphia; Samuel D. Larzelere, Willow Grove, Pa.; John J. Maher, Philadelphia; Harry A. Meisner, Baltimore, Md.; Mayhew Michener, Colmar, Pa.; Harry C. Millar, Hatboro, Pa.; Edwin S. Muir, Philadelphia; Charles F. Oat, West Chester, Pa.; Leonard Pearson, Ithaca, N. Y.; Thomas Raynor, Philadelphia; Frank L. Smith, Philadelphia; Edgar Tully, Philadelphia; John P. Turner, West Chester, Pa.; Jeremiah P. Zuill, Bermuda, W. I.

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\*Being under the required age, will not receive his diploma until a later commencement.

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## SOCIETY MEETINGS.

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### MASSACHUSETTS VETERINARY MEDICAL ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Medical Association was held on May 28th, 1890, at No. 19 Boylston Place, Boston, President Thomas Blackwood in the Chair.

The following members were present: Drs. Blackwood, Bryden, Howard, Lee, Marshall, Peterson, J. S. Saunders, Skally, Winchester and Charles Winslow. Honorary member, J. H. Stickney. Visitors, Dr. H. C. Ernst, Dr. J. G. Whitney, Pawtucket, R. I.

The minutes of the last meeting were read and accepted.

Dr. Winchester moved that the matter of Dr. K. Winslow's resignation be acted upon at a later meeting. Seconded, carried.

The meeting having been called for a discussion of rabies, to be opened by Dr. Winchester, he opened the discussion by saying that he claimed no originality for what he had to say, but simply gave a short résumé of the views of others, quoting Ziegler, Bruekmuller, Fleming and other pathologists. He then spoke of how difficult it is for the veterinarian to make a correct diagnosis of rabies in his patients unless he has a good history of the case or verifies his diagnosis by experiment. He concluded by giving Dr. F. S. Billings' views of the disease, especially its having but one termination, and that a fatal one.

The chair then called upon Dr. H. C. Ernst, of the Bacteriological Laboratory of the Harvard Medical School, to follow Dr. Winchester in the discussion.

Dr. Ernst commenced by saying that he regretted that he could not hear more from other members present on their individual views before speaking himself, and also hoped that any shortcomings on his part would be excused, as he had hardly rested from a trip to the West. He did not see how any one could doubt the existence of rabies. Most writers on pathological anatomy are ready to acknowledge that many things which they wrote a few years ago are wrong to-day; there is no doubt about the disease being in existence, and it is believed to be due to a *contagium vivum*.

He said that no wonder the symptoms vary, depending as in a disorder of the nervous system upon the temperament of the dog and the surrounding influences of excitement or quiet. He quoted the case of a colley dog which he owned which had recently died of rabies, a great change being noted in his disposition in a few hours between the morning and the afternoon of the day he was taken with the malady. The dog, after two or three days of suffering, was chloroformed. In this case there was a history of the dog having been bitten about three weeks previous to the time he was seized, by a strange dog passing through the street.

Dr. Ernst believes the term "hydrophobia" to be a misnomer, as the disease is not accompanied by a fear of water. We cannot judge of the disease in man by this symptom (fear of water), as the name "hydrophobia" may have an effect upon the mind of a person, affecting the imagination, whereas it would not among the lower animals. He then spoke of a recent case of rabies in a man at the Massachusetts General Hospital. This man said that he was conscious at all times during the progress of the disease, but that he had not the power to resist

the paroxysms which seized him, and the next moment it was all that four attendants could do to hold him down on the floor. May it not be the same in the case of the dog? Dr. Ernst believes it is, and that most of the cases we see of furious *rabies canina* result from exciting the animals, and that in most instances if the dog were left to himself it would take the form of what we call "dumb rabies."

He then gave a summary of the doings of the Institute Pasteur, over seven thousand persons having received the protective inoculation in four years with a loss of only 67 per cent., the percentage of mortality being less from year to year as the methods of inoculation become more and more exact. There is also a greater fatality among those bitten on the head or face.

As to the cauterization of bites from rabid animals, the cases afterwards being treated by Pasteur, cauterization being performed with the hot iron and also various chemical caustics. Of those treated in this way, and afterwards receiving Pasteur's protective inoculation, the per cent. of deaths was greater than in cases where the bite was left alone. Dr. Ernst thinks cauterization a mistake, but believes in strong ligation, if possible, and then sucking the wound. There is no danger of absorbing the poison by the mouth if the buccal mucous membrane is healthy.

Pasteur, in his Annals of the Institute, prints a map showing how much more common the disease is in some localities than others in France, and also gives tables showing that hot weather has nothing to do with increasing the frequency of the disease, it generally being more common in the winter months.

Dr. Ernst then spoke of the first case of rabies in this locality being brought to his attention by the Secretary of this Association a year ago, and its increasing frequency up to the present time. He has also known of five cases of human rabies near Boston within the last four months, and more may have occurred which were not correctly diagnosed. He also said that all scientific bodies should protest against such evidence being produced as was given at a legislative hearing on muzzling dogs at the State House last winter.

In answer to questions asked him by the different members, Dr. Ernst said that he believed in the efficacy of Pasteur's protective inoculation. That there is no way of making a positive diagnosis of rabies except by inoculation experiments. That he doubts if there be any spontaneous recovery from rabies, and if a case with symptoms of rabies recovered, he would not believe it was rabies unless it was proved in some way by inoculation experiments. He believed that if every dog in the community were muzzled for three months the disease would be stamped out; but it would be almost impossible to enforce such a law even if it were passed.

The President then called upon Dr. J. O. Whitney, who cited a number of rabies among people which he had seen, or that had been called to his attention in the neighborhood of Pawtucket, the instances given occurring at intervals from forty years ago down to the present spring, all the cases being directly traceable to bites of rabid dogs. Dr. Whitney also spoke of the greater danger from the bite of a rabid wolf. He also compared the mortality among people protected by Pasteur's method—less than one per cent.—and the mortality among those who received no protective inoculation where the death rate was fifteen per cent. of those bitten.

Dr. Bryden spoke of a case of rabies in a horse belonging to a client of his at Weymouth, which he was called to see several years ago.

Dr. Ernst then explained the principles of protective inoculation as employed by Pasteur, and described the difference between the old method at first used, and the intensive method which is the one resorted to now. He also said that Pasteur had probably not lost any cases that he began on in time, and that he had never had a case of blood poisoning resulting from inoculations against rabies.

Dr. Ernst and Dr. Saunders then discussed the question of the spontaneity of rabies, in which Dr. Ernst did not believe.

Dr. Winchester moved that a vote of thanks be given Dr. Ernst for attending and taking part in the discussion. Seconded and carried.

The following cases were then reported by Dr. Winchester. A case of cyanosis in a foal, the foal dying after violent exertion when a few days old and the foramen ovale between the auricles being found perforate upon post-mortem examination. Specimen shown.

Dr. Stickney: A case in a yearling colt castrated this spring. A few days after the operation the end of the cord was noticed hanging through the incision in the scrotum, two or three inches being visible; it gradually lengthened until it reached his hocks, and when colt was thrown to cut cord off a second time it became easily detached by manipulation, and a piece fifteen or eighteen inches came away. The colt afterwards made a good recovery. Specimen shown in alcohol.

Dr. Peters: A case of fracture of the skull in a horse. The horse, eight or nine years old, sorrel gelding, was turned into a lane leading to a pasture; he ran down the lane and finding the bars up turned and ran back towards the barn. He fell in some way striking his forehead with great force against a tree, causing an incomplete fracture of the skull near the junction of the frontal and parietal bones, horse dying from concussion of the brain, death being almost instantaneous. On post-mortem examination the thoracic and abdominal viscera were healthy. Specimen shown in a fresh state, autopsy having been made but a few hours previous.

Meeting then adjourned.

AUSTIN PETERS, *Secretary*.

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## INDIANA AND ILLINOIS VETERINARY MEDICAL ASSOCIATIONS.

The joint meeting of the Indiana and Illinois Veterinary Medical Associations was held in Terre Haute on the evenings of June 4th and 5th with Dr. M. E. Knowles, President of the Indiana Association, in the chair. At the opening of the meeting the Mayor of Terre Haute gave an address of welcome.

After the minutes had been read and approved and preliminary business disposed of, Dr. W. L. Williams, President of the Illinois Association, read a paper on "The Pathology of Azoturia, as suggested by its History and Symptoms."

In the discussion following the paper, Dr. Ferling inquired of essayist if he thought there was any predisposition?

No.

Dr. Bell inquired if animal was more subject to a return of the trouble after being once attacked. The essayist would say no, although there have been many cases that have had the trouble two or three times.

Dr. Thompson inquired if it was not more frequently seen in draft horses? The essayist considered not, although he could not speak from experience, his practice being almost entirely outside of draft stock.

Dr. Mylne: Is change of blood local or general? Local in gluteal regions, because of their doing most work.

Dr. Knowles: Has season any influences? Yes, because of care and work being more irregular in spring.

Dr. Macaulay: The cases he had observed were almost entirely in the spring, and because of this was inclined to think the terminal nerve-endings and the pseudosiferous glands played an important part. In spring-time a horse's coat is undergoing change, thus making these nerves much more sensitive, and on a fit subject for the trouble coming from the stable to the cooler air, these extremely sensitive nerve-endings become affected and the sweat glands close and do not throw of their share of what is deleterious to the system, and thus one great channel of excretion is closed, and because of this, other channels, chiefly kidneys, are called upon for greater exertion, but being unable to take from the blood what is detrimental as fast as it is manufactured by tissue waste, the blood becomes surcharged with urea and other allied products, and the disease ensues. In almost every case the information is, that after going a short distance the animal commenced trembling and broke out into profuse perspiration; the sweat glands acting only after the disease is noticed to be present.

Dr. Ferling: How long does an animal remain down and yet recover? Nine or ten days—those remaining down longer generally succumb.

Dr. Diggs mentioned a case that had been down nine weeks and recovered.

Dr. Diggs: What percentage of cases recover after going down, in your practice? From sixty to seventy-five per cent.

Dr. Curphey: Would not the use of very soft catheters prevent excessive nervousness in patients? The essayist thought it would, but would use no catheter whatever for three or four hours.

Dr. Franklin: What treatment do you advise? Quietness; no catheter; enemas, and, if necessary, oil, sometimes stimulants.

Dr. Buckner: How does essayist quiet animal? A good strong man at head is as good as anything, but often uses gelsemium or chloral. Cases naturally have cessation of pain in three or four hours without any medicine.

Dr. Mylne next read a paper on the "Surgical Treatment of Fistula."

In the discussion following, Dr. Bell mentioned a case of fistula into cœcum following puncture, all coming out of fistula five days after puncture; used injection of corrosive sublimate and had case well in four days.

Dr. Williams mentioned a case in blood mare with abscess on cervical vertebræ which had never been treated, according to owner, although ugly scars were present. This case ended fatally.

Dr. Paul Paquin, State Veterinarian for Missouri, then gave an extemporaneous lecture on "Bacteria," and mentioned results of experiments made by him in preventive inoculation for Texas fever, &c.

The doctor mentioned that in order to understand the life of bacteria, these

microbes which exist in the borderland between the animal and vegetable kingdom, one must look into and study the life of higher animals and plants.

Look at the life of the sugar beet, for instance, and we find that it stores away sugar in its roots which remains there dormant, as it were, until time of blossoming, when it becomes soluble, is absorbed and causes the flowering. The active agent in this metamorphosis is diastes.

Animals live on plants and in the assimilation of the one into the body of the other we find many changes taking place, such as conversion of starch into sugar, &c. The agent in this change is diastes.

Take any kind of microbe, the commonest, perhaps, being the one of decomposition. We find changes in the dead body such as liquefaction, the agent for this change also being diastes. This would show that on many things the lives are parallel, all have to change things before assimilation, and without these bacteria which cause these changes, there would be no life.

What is the difference between microbes which cause disease and those that do not? In action none; they all act by changing substances on which they live. The real difference is, some live on live animals and others on ferments. Some live better in fluids—as blood—some on tissues. The septicæmia microbe transforms the blood for its nourishment, and thus causes the disease. In tuberculosis the microbe lives better on tissues, and they transform the tissues where they live. All diseases are due to living causes, and microbes are not the product of disease, as was once supposed.

The lecturer then spoke shortly on Tuberculosis, which causes one-eighth of the deaths in this country, of glanders and charbon, and then went minutely into the study of Texas fever. The micro-organism of this disease is not very easily isolated. Dr. Billings was the first man who found germs in livers of animals affected with the trouble, and connected them with the disease. Others had seen them, but he first grasped their importance. It is now known that these germs can be transmitted by inoculation from southern calves unborn to northern cattle. It is not anthracoid, the changes in the blood are quite different. We know that Texas cattle remain quite healthy while northern cattle contract the disease, and that these northern cattle cannot transmit the disease to other northern cattle. Why are these things so? The cattle in the South are “naturally” inoculated before birth, as the lecturer has proved having found the germ in diseased calves before their birth. This is nature’s method of prevention. Now when inoculation means prevention, why cannot northern men inoculate their cattle before shipping South. The lecturer then went on to describe his experiments in this line, and how his last results from use of cultivated germ were very satisfactory. Forty head of Shorthorns and thirty Herefords were shipped South for stock purposes along with others not inoculated. Of those inoculated none were lost; of the others about seventy-five per cent.

In Texas fever the blood is not fluidified as in anthrax, but by using up of red blood corpuscles. The disease is to a large extent of the blood corpuscles themselves.

The softness of spleen is due to a severe congestion, but there are more microbes in liver than in spleen.

How is it northern cattle do not transmit to other northern? Because germ



# AMERICAN VETERINARY REVIEW,

AUGUST, 1890.

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## EDITORIAL.

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“FOR ALMA MATER’S SAKE.”—Our dangerous position in the matter—reasons for our persistence—the sinking fund of the American Veterinary College—various attempts made to raise it—their failure—complete and partial—results of the efforts—the enthusiasm of all and in particular of a few—a new plan proposed by Dr. Coates—his motto and his chances of success. CONTAGIOUS PLEURO-PNEUMONIA IN THE UNITED STATES AND ENGLISH RESTRICTION.—Its recognition in this country several years ago, and the English embargo—commissions—Bureau of Animal Industry’s successful work—the disease crushed little by little—it is almost all destroyed—action of Hon. J. M. Rusk, Commissioner of Agriculture—an *American* bureau on *English* land—three American veterinarians under the leadership of another American veterinary surgeon starts for Europe—our best wishes and hearty hopes for their success. THE SEPTEMBER MEETING OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION. Director ARMAND CHARLES GOUBAUX’S death.

“FOR ALMA MATER’S SAKE.”—It is not wholly an uncommon occurrence in the experience of zealous and earnest advocates of new and beneficent enterprises, to find themselves in danger of becoming involved in complications and embarrassments of such a nature that they feel almost compelled to surrender their purpose and abandon the efforts upon which they had so resolutely entered. No one need permit himself to be surprised or disappointed by such a condition of things, nor should any one’s resolution fail before such a temptation. Yet we find ourselves, just at the present time, in a state of feeling somewhat like this, in respect to the contemplated new veterinary college edifice which we earnestly and hopefully desire to see taking its place among the public buildings of

our city, with its doors open for the reception of a coming host of incipient veterinarians.

We have labored for the creation of a sinking fund for the building of the American Veterinary College, in various methods which have been suggested; we have kept the subject before our readers as best we could, and as well and fairly as could be considered consistent with the position and duty of a publication which disclaims the character of special organ of any interest or locality in particular, and yet we find ourselves once more calling the attention of our readers to the same subject. Well, the only excuse that we feel called upon to make is that the subject is one of sufficient importance to justify its continued discussion—and this shall be our limit—until the publication of the final report of the inaugurating ceremonies, upon the completion and dedication of the finished structure.

Many plans have been prepared and submitted, and proposal upon proposal has been made, of which the realization seemed to be more or less feasible, but one and all, even to the last one, which was brought forward in the REVIEW for July, have as yet failed to produce adequate results; at least, none have been of such a nature as to give assurance that the object in view, to wit, the erection of a building for the college, could be favorably entertained upon the basis which it offered. It is not by any means to be inferred from these remarks, however, that the idea of an adequate and permanent home for our college is to be abandoned. The failures at which we have hinted do not mean the demise of the project, for although the call last made upon the alumni failed to produce just such an answer as we desired and partly anticipated, yet it did induce a response, and elicited the fact that many gentlemen were willing to answer the appeal, and answer it well. Nor was it from any mere personal feeling or motive of ambition or interest or of prospective return; it was for *alma mater's sake*, and though the total amount donated was not great nor magnificent, still it was significant even in its small dimensions. These successive, though partially unsuccessful efforts have, however, been followed by

another important result. They have inspired and fostered in the minds of some, a desire and a will to succeed where others have failed, and among these we are glad to name Dr. Coates, so well known to his brethren for his efforts and services in behalf of the school from which he graduated. A plan has been devised by this gentleman which we hope will not fail of success. His object is, as it has always been, the elevation of his profession at large, and especially the elevation of the American Veterinary College, which is his own alma mater, to the rank of the first in the land among its coadjutors; and with such a purpose in view, every one must wish him a better realization of his designs than those which have gratified the authors of others which have preceded his own. His motto is, "It is *for Alma Mater's sake*," and who of his brother alumni will decline to listen to him, or consent to remain deaf to the voice of his appeal?

CONTAGIOUS PLEURO-PNEUMONIA IN THE UNITED STATES AND ENGLISH RESTRICTION.—It is now several years since the recognition of the prevalence of contagious pleuro-pneumonia over a very extensive area of this country was known and acknowledged by every one interested in the cattle trade. Naturally, such a discovery when made, became the cause of wide-spread excitement among person interested in the exportation of cattle to Europe, and the Blissville nursery of the disease soon became the talk of every veterinarian in the Eastern States.

England at once placed an embargo upon American cattle, and their exportation was rendered very difficult, and only allowed under special conditions. Of course, effectual measures must be devised to meet this urgent state of things. Accordingly commissions were appointed and investigations were ordered, and experts were sent to England to ascertain whether existing restrictions could not be removed, or at least amended and modified.

The Bureau of Animal Industry was organized, and its work soon arranged and actively persevered in. Yet notwithstanding all this, the shipment of cattle from the United States continued to be subjected to the same strict regula-

tions, and still suffered greatly from the comparatively unjust severity of its first conditions. The subject, however, was one of too much importance to be overlooked by the general government, or fail to receive due attention from the national guardians of the interests of the people. The labor of the Bureau of Animal Industry was not wasted, and after several years of careful and well organized effort, the disease was by degrees effectively subjugated. State after State, and county after county, were relieved from its ravages, and it is now so effectually under control that it may be safely predicted that in a very short time the United States authorities will be in condition to announce to the world the complete extirpation throughout all her borders of contagious pleuro-pneumonia, an announcement which few, if any of the European States will be able to match. The energy which the present Commissioner of Agriculture, Hon. J. M. Rusk, has practiced in the management of this important question reflects the highest credit upon that gentleman, and it is through his recent proclamation, together with the active work recently organized by him in Long Island, that the promulgation in a very short time of the official declaration of exemption has become a possibility and a fact.

Nor is this all. Not only will contagious pleuro-pneumonia be, in fact, stamped out and destroyed, and our exported cattle show no traces of it when they leave our ports, but they will also arrive outward as they started, in a healthy condition, and that condition will be substantiated by means of official veterinary inspection, the government at Washington having decided to station a special agent in London, who will have acting under him *three other veterinarians*, stationed respectively in *London, Liverpool and Glasgow*, and, no doubt, a faithful performance of their duties will prove in a very short time the injustice of the charges made against us in alleging the shipment of lung-diseased animals from the United States. The inspectors are to report for service on the 1st of August, and will consist of Doctors Wray, Melvin and Ryder, with Mr. J. H. Sander, of Chicago, as special agent of the department, but not in a professional capacity. The three first

named gentlemen are all *American veterinarians*, and experts in the inspection of pleuro-pneumonic and tuberculous cattle, and they will be sure to do their work well.

We should all feel gratified, as veterinarians, by these appointments, which may well be regarded in the light of another honorable recognition of the claims of veterinary science by the authorities of the general government. It furnishes another among many illustrations of the progress which it is making, surely, and not slowly, either, in compelling the public acceptance of the value and importance of the functions and adaptations of its specialties, and its place and uses among related branches of knowledge and of public economy, and tends strongly to indicate the right place and the proper function of the veterinarian in scientific society and the world.

Dr. E. Salmon, the Chief of the Bureau of Animal Industry will accompany the party in order to see that the work is properly inaugurated. Let this new commission in leaving our shores, be assured of our best wishes and of our hearty hopes for the success of their new and important labors.

THE SEPTEMBER MEETING OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.—In our last issue, in connection with the expression of some of our apprehensions relating to the next meeting of the United States Veterinary Medical Association, we published an open letter from one of our Western friends, in the hope that if any answer was to be made we should be able to present it to our readers in our August number. Though an answer has been prepared, we regret that if it has been sent to us, its publication cannot take place before the September issue. We waited for it as long as we could, and even longer than we ought, and can wait no longer if we wish our publication to be issued at the proper date.

ARMAND CHARLES GOUBAUX.—We have received as we go to press the sad news of the death of Honorary Director Armand Goubaux, the last of our teachers when we were a student in Alfort. We make a simple mention of this sad event in this issue, and will pay it more dutiful respects later on.

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## ORIGINAL ARTICLES.

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### COLD ABSCESSSES AND THEIR TREATMENT.

By W. J. COATES, M.D., D.V.S., New York City.

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A most important and at the same time common occurrence is that which is known as cold abscesses at the base of the neck or of the inferior and lateral cervical region at the junction of the shoulder. It consists essentially of an accumulation of pus in the deeper layer of muscular and areolar tissue, situated principally beneath the mastoido-humeralis muscle, just external to the jugular groove of the neck, in which lies the jugular vein and carotid artery, taking place either on the right or left side, giving rise to a considerable swelling and the appearance of a tumor.

This condition is rarely met with by the practitioner when it first makes its appearance, as it is caused by direct pressure of the collar, and the owner of an animal attacked, thinking it nothing serious, treats the swelling by all remedies known to him, for a shorter or longer period and, seeing no improvement, consults a veterinarian, who often tries various remedies for weeks and months without success.

The etiological factor is direct pressure of the collar, producing a contusion of the deeper layers of muscular structure, with a capillary hemorrhage in the areolar tissue, forming a nucleus from which structural changes take place. The blood becomes encapsuled by a firm layer of fibrin or plastic material being deposited, forming a wall; the contents of the cavity undergoing changes and pus forming. The walls become thicker by the deposit of plastic matter, which indurates and hardens, forming a capsule one to three inches thick, while the cavity is small in comparison to its membrane and contains a thin looking pus; in other cases the accumulation of pus is considerable and the walls thin, taking the appearance of an acute abscess, but in the majority of cases the fluid portion of the pus is absorbed, leaving a cheesy mass with thick fibro-plastic walls.

From the character and extent of the pathological changes taking place in the deeper muscular layers and areolar tissues of that region of the neck, and the pressure produced thereby, an œdema takes place, causing a soft doughy swelling, considerably diffused, extending on all sides of the seat of injury, which may cause the skin to be raised an inch or more and circumscribed eight or ten inches, but in the course of a few days the œdema begins to decrease by absorption or infiltrates through the cellular layers to the lower portion of the pectoral region, gradually passing away.

In cases where there is a considerable accumulation of pus and a tendency to point, there will be extreme sensitiveness, but in the majority of cases there is very little pain on pressure, and the tumor becomes more and more defined, and can be moved about from side to side, resembling a fibrous structure, but not with the same looseness of a well defined fibroma, which may lie loose in the areolar tissue or be held by a pedicle. After the œdema passes away and the tumor becomes more prominent, it gradually increases in size and becomes very large, with no tendency to point, and becoming firmer and harder, though fluctuation can be detected.

At times it becomes very difficult to diagnosticate between these abscesses and other conditions resembling them, on account of the impossibility of determining fluctuation. The history of the case helps considerably in forming an opinion; the mode of origin, its slow and steady growth, its resistance to external applications, the peculiar character of the swelling and the absence of pain—all of these help to decide the nature of the enlargement, but to determine the character without a doubt is by exploration; an exploring needle or trocar and canula should be introduced and the nature of the fluid, if present, will decide. In the absence of pus, serum or blood, the tumor being well defined and movable, a fibroma is usually met with, but sometimes, on account of the cavity being so small and so deeply seated, there is a possibility of not plunging the exploring needle into the contents of the cavity and misleading the surgeon.

The treatment of these abscesses has been a vexed ques-

tion, as it is one of the most troublesome of all forms of abscesses situated on the external portion of the body to treat satisfactorily. Absorbents have been used and failed, in the form of blisters, ointments and solutions externally and iodides internally; aspiration has been practiced and caused the swelling to subside somewhat, but it has filled up again; escharotics have been effectual after aspiration in some cases and have failed in others, leaving a fistulous tract. Making an incision into the tumor and cutting it out piecemeal with scissors, and controlling the hemorrhage with the actual cautery and with pressure, has been successfully practiced. Passing setons saturated with astringent or caustic solutions have failed, also the injection of solutions in various portions of the tumor. The repeated injection of caustics has done a great deal of harm by causing inflammatory action and multiple abscesses forming. Excision has been resorted to, but is objectionable on account of the excessive hemorrhage which occurs and the necessity of throwing the animal in the majority of cases. Excision can be accomplished readily without pain by the use of cocaine.

The method of operation and the habit and skill of each surgeon may accomplish a good result in various ways. Some veterinarians use an expectant plan of treatment where a want of faith in surgical measures exclude operative interference.

No doubt these means have been successful and every surgeon adopts the plan with which he has had the best results, but seeing all these methods employed and employing them myself, I have found that the most effectual plan is with the actual cautery. The simplicity, safety and efficiency of this method make it desirable that it should be better known. The only plea which I offer for removal with the actual cautery in preference to the knife, is to avoid hemorrhage.

On the start or as soon as the œdema takes place, hot fomentations are indicated to reduce the swelling and hasten suppuration, which in a few cases will develop rapidly and point, so that fluctuation can be detected and the abscess opened with a bistoury, the contents evacuated, the healing



process taking place rapidly ; but in the majority of cases no fluctuation can be felt on the subsidence of the œdema, the tumor remaining firm and hard. It is in these cases that such good results have followed puncturing with a pointed iron, heated to a white heat and driven in four or five inches before pus can be detected. It is better to have two irons, made in the shape of firing irons, bent at right angles with a prong, one five or six inches in length, one inch in diameter at the base and tapering to the point ; the other the same length but thicker.

This is a most radical operation and the method of procedure is to plunge the small iron into the hard indurated mass, so as to penetrate the center of the cavity ; it may have to be repeated three or four times in the same aperture before pus is reached, as I have often driven the iron in full length before pus would escape ; then the larger iron is introduced to produce a larger opening and to cauterize the bottom of the cavity and the thickened walls. In about six days a large slough takes place, leaving a healthy granulating surface, which heals without difficulty, an adhesive inflammation being induced with no hemorrhage to arrest.

After cauterizing, the surrounding parts become greatly œdematous, which gradually subsides as the sloughing process takes place, the adjacent tissues become hardened and indurated, but gradually soften and regain their normal appearance as the cavity closes. By using basilicum and populum ointment in equal parts, smeared over a pledget of oakum and introduced in the tract, the softening of the tissues will take place more rapidly and at the same time act to prevent reunion of the granulating walls and to secure proper adaptation to the bottom of the wound. The result of this procedure is simply to keep the margins of the walls from uniting, and cause the wound to fill by granulations from the bottom. The wound usually heals from the bottom and is entirely closed up in three or four weeks and the animal is able to resume his work.

Some practitioners claim that the treatment by the actual cautery has met with poor success in their hands. The parts apparently healed but had a recurrence of the same in a few

weeks ; or that a sinus was the result, with a chronic fistula. This is true, for many such cases come under my observation, having been treated by veterinarians with such complications resulting. The cause of failure in producing a radical cure has been, in cases where there has been a recurrence of the abscess, in not cauterizing the cavity sufficiently or allowing the tract to close up too soon. When cases of fistula result it is where tents of oakum are continuously introduced, forming a source of chronic irritation and a pyogenic membrane forms in the tract. The obliteration of this callous surface must be effected by means of processes for establishing healthy granulations in the tract ; so soon as the pyogenic membrane disappears from the walls of the canal and granulations are set up, an effort should be made to bring about the process of union by granulation.

There is a serious complication liable to take place from cauterization with the actual cautery. At the time the sloughing process takes place it may carry away a portion of the large bloodvessels, giving rise to a profuse hemorrhage, which is difficult to control, requiring from twenty-four to forty-eight hours of firm pressure and plugging of the cavity. Fortunately this accident has only taken place once in my practice and was with the utmost difficulty stopped by plugging and firm pressure with a strapping apparatus applied around the base of the neck and body.

This serious complication can be overcome by not cauterizing too severely on the jugular side of the neck. In all cases where the enlargement lies close to the jugular groove the mass should be pushed over by an assistant before using the cautery.

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## A COMPARATIVE STUDY OF ANÆSTHETICS.

By DR. G. ARCHIE STOCKWELL, F.Z.S.,

Member of the New Sydenham Society, London, Eng.

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The question of preference in the selection of an anæsthetic for general or even special purposes, is still in many quarters a moot one. Chloroform, ether, methylene chloride,

ethyl bromide, nitrous oxide, and the so-called "triple" or "A. C. E." mixture (alcohol 1; chloroform 2; ether 3 parts), have each staunch adherents. In the medical and scientific press also, periodically appear essays and discussions having for their aim the establishment of the superiority of one or another of these agents, but as such for the most part are manifestly of partisan character, they contribute little to the sum total of our knowledge.

It is obvious that too great care cannot be exercised in the choice of an anæsthetic, not alone from the physiological relations of the agent, but also as regards its purity and strength. Much of the opprobrium that has, from time to time, been heaped upon each and all, had its origin in the employment of crude, weak and impure products.

It may further be said that neither clinical experience or experimental research has been able positively to demonstrate the exact conditions in either man or animals to which any one anæsthetic is specially applicable, or even under which it can be most advantageously employed, for the information extant is almost wholly made up of negations. Each individual patient requires individual study, since what may be "meat" to one, may prove "poison" to another, and the final selection, if judiciously made, will be based solely upon the physiology and pathology of the disease, the physiological manifestations prone to follow the use of the anæsthetic, and racial and individual idiosyncracies. Finally, the anæsthetic chosen, despite the evidences that may be adduced by its friends in favor of innocuousness, should be employed with the greatest circumspection and care, since the very conditions that render anæsthesia possible are always grave sources of danger—a danger that may be increased or diminished by obscure morbid conditions. When we consider the vast numbers of men and animals that yearly undergo anæsthesia, and the ignorance and carelessness that so generally attends the administration of an anæsthetic, it must be confessed the dangers are in the main more apparent than real, or else the small ratio of fatalities is the result of "good luck" rather than expert management; it only proves that the vital spark is more

persistent and resistant along certain lines than our physiological studies would lead us to believe, and that morbid conditions that threaten life, perhaps, in one direction, are really saving factors in another.

#### CHLOROFORM: FORMYL TER-CHLORIDE.

For physiological experimentation, and in the domain of surgery, general or special, chloroform is undoubtedly the favorite anæsthetic. I will go even farther and assert that for the majority of animal life, man perhaps excepted, it is the preferable agent. It is one of the least obnoxious as to odor and vapor, is rapid and permanent in effect, convenient as regards bulk and portability, and recovery from its influence speedy. These are desirable and important considerations, but as regards man, are over-borne by certain specific disadvantages.

Chloroform has first a stimulating, followed by a sedative action upon the brain, and derives its anæsthetic power from the paralyzing influence it exerts upon the ganglionic centres of the sensory nerves, the reflex functions of the cord at the same time being held in abeyance. So far, its action is practically identical in man and lower animals; but when pushed to profound narcosis quite different phenomena may supervene. And just here it seems necessary to refer to the late Hyderabad Chloroform Commission.

This Commission was the second of its kind and title, and like the first, owed its inception to Surgeon-Major Edward Lawrie who, confessedly, was animated with the desire of vindicating his former teacher, Prof. Syme; the latter, as a follower of Thomas Wakely, was accustomed to teach that the fatal effects of chloroform arose from paralysis of respiration solely. The first Hyderabad Chloroform Commission attracted little attention, since it was composed of gentlemen devoid of professional reputation outside of their own social circles; and the second would have been equally obscure but for the association therewith of Dr. T. Lander Brunton as a representative of the *Lancet* of London, though why a *physi-*

*cian* should have been selected instead of a surgeon\* or professional anæsthetist, is beyond comprehension.

The reports of both Commissions are admittedly and confessedly partizan, and though the statement is made that the object was experiments "to demonstrate the effect upon blood pressure, heart and respiration of the inhalation of chloroform, ether and the A. C. E. mixture," a second announcement declares the purpose to have been "testing the suitability and safety of chloroform as an anæsthetic."

The reports alike bear the impress of Dr. Lawrie's pen, and the first displays an animus against the feeling and watching the pulse in chloroform administration that is by no means concealed in the second, and the latter boldly asserts as facts the following:†

Chloroform when given continuously by any means which ensures its free dilution with air, causes a gradual fall of the mean blood-pressure, providing the animal's respiration is not impeded in any way. \* \* \* If the chloroform is less diluted the fall is more rapid, but is always gradual so long as the other conditions are maintained; and however concentrated the chloroform may be, it *never causes sudden death from stoppage of the heart* (Paragraph No. 1). \* \* \* The theory which has hitherto been accepted is that danger in chloroform administration consists in the stoppage or slowing of the heart by vagus inhibition. This is now shown to be absolutely incorrect (Paragraph No. 18). \* \* \* Granting, then, the truth of Ringer's conclusions from experiments upon the frog's heart (which have not been repeated and confirmed by the Commission) that chloroform has a gradual paralyzing effect upon the heart tissue, we must conclude that such an effect, in the degree in which alone it could occur in the practical inhalation of chloroform, would rather be a source of safety than of danger (Paragraph No. 19). \* \*

\* In \* \* \* the case of a dog that had had morphine, remarkable slowing and even temporary cessation of the heart's action occurred again and again at the same moment respiration stopped, but the heart invariably recovered itself.

\* \* \* The failure of the heart, if such it can be called,

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\* The distinction between the physician and the surgeon is sharply drawn in Great Britain, both in study and practice.

† *Vide, The Lancet*, London, January 18th, 1890.

instead of being a danger to the animal, proved to be a positive safeguard, by preventing the absorption of the residual chloroform and its distribution through the system (Paragraph No. 22).

Morphine appeared \* \* \* to render the rise of blood-pressure that occurred when chloroform was discontinued, slower and less complete, and to bring about a more or less permanent condition of anæsthesia (Paragraph No. 31).

♦ Chloroform has no power of increasing the tendency to either shock or syncope during operations. If shock or syncope from any cause does occur, it prevents rather than aggravates the dangers of chloroform inhalation (Paragraph No. 37).

The experiments on dogs that had been dosed with phosphorus for a few days previously, show that the fatty and consequently feeble condition of the heart and other organs so produced, have no effect in modifying the action of chloroform. \* \* \* Numerous attempts were made in these animals to produce shock by operations in recumbent and vertical positions, but without any more result than in those that were healthy (Paragraph No. 38). The truth about fatty heart appears to be that chloroform *per se* in no way endangers such a heart; but, on the contrary, by lowering blood-pressure, lessens the work the heart has to perform, which is a positive advantage. But the mere inhalation of chloroform is only a part of the process of administration in practice. A patient with an extremely fatty heart may die in mounting the steps in front of his own hall door, or from fright at the mere idea of having chloroform, or of undergoing an operation, or during his involuntary struggles. Such patients must inevitably die occasionally during chloroform administration, and would do so even were attar of roses, or any other harmless vapor, substituted for chloroform (Paragraph No. 39).

As regards the effect of chloroform upon different animals, it may be said to be the same as far as its anæsthetic action is concerned (Paragraph No. 42). \* \* \* The cases \* \* \* \* are quite sufficient to show that animals are just as liable to death from careless administration of chloroform as human beings; and the accidental deaths which occurred during the experiments of the Commission afford the best possible proof that the effects of chloroform are identical in the lower animals and in the human subject. The statement so frequently made that dogs are more resistant to chloroform than human beings, is entirely incorrect. (3d paragraph under caption of *Accidental Deaths*).

The experiments with ether show that it is impossible to produce anæsthesia with this agent unless some form of inhaler is used which thoroughly excludes the air (Paragraph No. 45). If surgeons choose to be content with a condition of semi-anæsthesia, it can, no doubt, be produced with perfect safety, though with discomfort to the patient, by ether held rather closely to the mouth. Such a condition of anæsthesia would never be accepted by any surgeon accustomed to operate under chloroform. If more perfect anæsthesia is required, it can be procured by excluding the air more rigidly, *but then there is exactly the same danger as in giving chloroform* (Paragraph No. 46).

Two other statements emanating from Dr. Lawrie are of interest in this connection, viz.: "That since the year 1855 in Great Britain there has been no death from chloroform recorded in which it was proved that the respiration alone was attended to throughout the inhalation," and that: "Among Scotch surgeons, who are accustomed to regard paralysis of respiration as the sole danger in chloroform anæsthesia, deaths from chloroform are lacking, or at least extremely rare.\*"

The claims of the Commission as just given, evidence that its members are ignorant that the cases of cardiac syncope from chloroform are those in which semi-asphyxia is produced and followed by deep inspiration. It was along this line the experiments should have been conducted, which was done in only four instances. Again, it has always been maintained by the upholders of the heart-syncope theory, that such cases are of extremely rare occurrence—only once in two or three thousand instances—and that it is only by a definite combination of circumstances that sufficient chloroform can be introduced into the blood. Because the Commission did not obtain this combination in less than five hundred experiments—really in only *four* experiments—they confidently assert such cannot exist. Surely this is not science!

It must be remembered also, in spite of the dictum pronounced that the results attained by anæsthesia in lower animals and in man are precisely the same, that such is value-

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\*As I am obliged to quote this from memory, not having the data by me, it is possible the wording is not exact, though I can vouch for the correctness of the sentiment implied.—*Author*.

less, coming as it does from individuals possessed of but the most meagre knowledge of comparative physiology and pathology; moreover, the statement is false in more than one particular.\*

Dogs are not human beings, and 'researches and experiments have repeatedly proven that exact parallels are impossible. To morphine, the Commission say, "pariah dogs are very indifferent." Such is not true of man, neither is it of domestic canines generally, who for the most part are peculiarly sensitive to opium and its derivatives, for reasons obvious: This is asserted by Youatt, Blaine and Mayhew, and repeatedly proven in my own personal experience. Even domestic canines of the same precise breed vary materially according to surroundings, (climate, latitude, altitude, etc.,) and more so than man, as they possess extremely impressionable nervous systems; and the dog born and bred in Europe has the vascular system much greater developed than the same animal reared in America. Prof. H. C. Wood† justly remarks, criticising this statement of the Commission: "We have given elaterium to dogs until it has caused death, but it has not purged. Suppose that every dog in India had had administered to it elaterium without the production of purgation, would that prove that elaterium does not purge man?"

Again, regarding the absence of *shock*, and inability to produce in the animals experimented with, and upon which no inconsiderable stress is laid, it is well known to comparative physiologists that, while shock may obtain in higher degree than in man in some animals—notably certain of the *Felidæ* and the *Leporidæ*—such is practically non-existent in most feral creatures, especially the feral *Canidæ*, and the pariah dog is practically of this class.

Also, for all three hundred and sixty pariah dogs in India may have died through respiratory failure as the result of

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\* This premise, founded on the supposition that like physical conformation begets like physiological conditions and attributes, is possessed of neither reason or fact. The comparative physiologist, would never have fallen into this error.—*Author*.

† *Medical News*, February 22d, 1890.



chloroform vapor administered, it must be remembered that a far greater number in Germany, France, England and America, under like experiments have succumbed to cardiac arrest. The experiments of Ungar and Strassman\* are conclusive in this respect.

But we may believe also, that in many instances animals, to whom lethal doses of chloroform are administered, do succumb to pulmonary paralysis, but it is denied by all competent and conscientious observers that this is either an invariable or even common sequel in human subjects; the majority of deaths among the latter are wholly inconsistent with such view, for the fatal result is usually sudden; the patient in the midst of violent struggles, and after a deep inspiration becomes practically lifeless, the pulse ceasing, or sometimes becoming distinctly or gradually feebler, before cessation of respiration. Further, in chloroform accidents in man of the sudden variety considered to be due to cardiac syncope, certain conditions are present which are difficult to obtain in animals.† It must be admitted also that when laboratory experiments clash with clinical observations, the latter must always have precedence; the former only lead the way to those studies whereby the final verdict must be determined.

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\* *Virchow's Archives*, B. D., 115.

† Since the report of the Commission, a series of parallel experiments were undertaken by Prof. H. C. Wood and H. A. Hare, of the University of Pennsylvania, which have an important bearing. They say (*Medical News*, February 22d, 1890):

“As we use between us, in the laboratory of the University, many dogs yearly, a very large proportion of which are finally killed by chloroform, we may be excused for our positive assertions that chloroform *is a cardiac paralyzant*, and does kill dogs by direct action upon the heart or its contained ganglia; especially since we have been strengthened in our opinion by the fact that Dr. Reichert, Professor of Physiology in the University, has reached results confirming our own, and has frequently demonstrated the same to the University classes. \* \* \* It has been the custom of one of the authors of this paper, in his lectures before the University class, to demonstrate by means of the respiratory tambour, the mercurial manometer, and the kymographion, a continuation of respiratory movements after cardiac arrest through chloroform. Further than this, we have at various times taken tracings proving the same facts.

“The statements that have been recently made in the Indian journals, and in the London *Lancet*, have led us to re-examine the subject, and to make a

Dr. Snow long since reconciled the differences between the results of experiment and clinical practice, by showing that fatalities might happen in one of two ways, according to the amount absorbed:

1. Chloroform gradually inhaled until death results, kills by gradual paralysis of respiration, the heart continuing to beat after cessation of respiration:

2. But when a large dose of the drug is suddenly taken into the system, the heart ceased beating before the respiration stopped:

3. It is also thought that this sudden paralysis might set in before insensibility is produced. The cardiac paralysis is considered to be the chief factor in the fatal result, because efficient artificial respiration does not resuscitate these cases. There is an impression that cessation of the respiration may be entirely remedied by artificial respiration, but that the affection of the heart is necessarily fatal.\*

These views are further confirmed by the Commission of the Medico-Chirurgical Society, London, 1864, and by a Committee of the British Medical Association in 1879, who state:

Chloroform has sometimes an unexpected and apparently capricious effect upon the heart's action. It may cause death in dogs by paralyzing either the heart or respiration. The

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series of experiments upon it with great care. We have also varied and extended these experiments in order to determine whether chloroform paralyzes the heart by direct influence, or by an indirect action through the vagus. \* \* In all cases accurate tracings have been made by means of the kymographion and the respiratory tambour.

\* \* \* "The experiments \* \* \* show that chloroform acts as a powerful depressant poison upon both respiration and circulation; that sometimes the influence is most felt at the heart, and death results from cardiac arrest; that in other cases the drug paralyzes primarily the respiratory centres, whilst in other instances it seems to act with equal force upon both medulla and heart. So far as practical medicine is concerned, it makes little difference whether the heart stops just before or after respiration, so that those cases in which cardiac and respiratory arrest are almost simultaneous, are, for the purposes of the clinician, the same as those in which arrest precedes respiratory paralysis. Finally, the results of our new experiments also coincide with our previous experience in the laboratory, and with what we believe to be the general belief of physiologists—that cardiac arrest is specially prone to occur when chloroform is administered rapidly and in concentrated form."

\* *Medical Chronicle*, London, vol. xii, p. 2.

variations in this respect seem to depend to some extent on individual peculiarities of the animals.\*

Dr. Alexander Wilson, Anæsthetist to the Royal Infirmary, Manchester, makes several objections, that are most pertinent, to the conclusions of the Hyderabad Commission regarding the effect of chloroform on man. He says:

First, there is the difference which may exist in the action of chloroform on the heart of man and animals. It has been shown that the suddenly fatal cases are rare in human subjects in which there is any impediment to free expansion of chest; e. g., Clover has pointed out that a phthisical patient is less likely to take a fatal dose of chloroform than one with healthy lungs, because his chloroform-absorbing capacity is diminished. Again, it has been noted that but few patients die from chloroform when it is inhaled lying on the side; also that few, if any, sudden deaths are reported in case of ovarian tumors. The explanation of these cases is that the interference with full expansion of the lungs, by the position or presence of the tumor, prevents the lungs taking in the unnecessary fatal dose. On the other hand, the greater number of the suddenly fatal cases occur in people with healthy chests and large vital capacity, in which the patient being in the natural upright position, can give the respiratory muscles full play and completely fill the chest. Thus it is worth considering if the holding of a struggling animal, such as a dog, might not so interfere with its breathing as to prevent the full dose being taken, especially as the animal would not be likely to be held in a natural position. There is an indication in the report that, in at least some cases, the holding of the animal did actually interfere with respiration. If it did so in one case, it probably did in many, especially as a dog's thorax is so shaped that to hold the fore legs together in front of it would prevent the complete expansion of its chest, and so prevent it suddenly taking a fair dose of chloroform vapor. In animals too, we have an absence of the desire to inhale freely. In at least one case reported in man, the wish to inhale chloroform freely contributed largely to the fatal result.

With the human race the "subject" is generally young or middle aged, with an expansible chest, and the anæsthetic is willingly inhaled, quietly at first, until semi-unconsciousness is produced, when the fauces and glottis are insensitive. Then,

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\* *British Medical Journal*, 1879, vol. 1, pp. 1 and 921.

during the struggling, with or without holding the breath, the patient—often in an upright position and having his arms fixed by assistants, which gives the respiratory muscles good purchase—gets one or two deep inspirations at the greatest advantage and obtains the maximum amount of chloroform. There is the desire to get under the influence of the drug, the voluntary inhalation followed by the still steady conscious anxiety to inhale more, and then the involuntary deep inspiration in the natural position in which such inspiration can be best taken.

It will be observed that all these are conditions difficult and often impossible to obtain in experiments on animals, and it is only under such conditions that cardiac paralysis has been produced in man. The interval between the stoppage of the heart and the respiration is so short, that these points, trivial as they may seem, may easily be of importance in modifying the result.

Aside from the foregoing there are other serious objections to the acceptance of the claims of the Hyderabad Commission. For one thing, I opine it will require something more than mere assertion backed by phosphorous experiments upon dogs in whom shock is practically non-existent, to convince physiologists and pathologists that the vapor of chloroform in the presence of a fatty heart, is as innocuous as “attar of roses.” Even the association of the name of so talented a *physician* as the editor of *The Practitioner* is not convincing, as in spite of his deserved reputation as an author, he has on more than one occasion proven himself most fallible as regards the physiological action of anæsthetics—for instance in his assertion that small doses of chloroform are more apt to produce death than large, because “the reflex contraction of the vessels is destroyed whilst the heart is stopped or slowed, so that the irritation of a sensory nerve may produce syncope by stopping the supply of the blood from the heart while the blood still flows rapidly from the arterial system through the capillaries into the veins;\*” a statement that, if true, would

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\* Brunton's *Materia Medica, Pharmacology and Therapeutics*.

inculcate more cases of heart failure under ether than chloroform, since the former is more irritating to the upper air passages.

Again, Dr. Lawrie's assertion that no death has occurred in Great Britain through chloroform when the respiration alone was attended to, is not borne out by facts. A notable case is recorded in the *British Medical Journal* for 1884,\* and Dr. Wilson (just quoted) declares † "there are several cases where the respiration only was attended to, and there are many more in which respiration was attended to as fully as possible." Equally untrue is the comparison of chloroform anæsthesia in Scotland and England, for while fewer people die in the former country, fewer people inhale it. The population of Scotland is less than four millions, while that of England is more than twenty-nine millions, and careful examination of medical literature from 1878 to 1885 shows there were fourteen deaths north of the Tweed against one hundred and ten in the south; or in other words the death rate in Scotland is one in 285,714 against in England one in 263,636, a difference practically inappreciable.

Again, even supposing the claims of the Commission could be unreservedly accepted as regards the experiments conducted, those made for their teachings, that: "It has now been demonstrated that this anæsthetic may be given in any case requiring operation in perfect safety," and "deaths from chloroform are not inevitable, therefore they are preventible and by due care in administration may be avoided" ‡—cannot be. The Commission seem to have forgotten that their own showing reveals another danger, even more serious than cardiac syncope, viz. paralysis of the vaso-motor centre. This may set in suddenly, without warning, and is as far beyond treatment, and as fatal, as cardiac paralysis; and when death occurs from this cause, it is clearly imaginable that the vaso-motor centre may be hopelessly damaged or rapidly reaching that stage, while the pulse is still present and the heart at-

\* Vol. ii. p. 811.

† *Medical Chronicle*, vol. xii. p. 9.

‡ *Lancet*, London, January 18, 1890.

tempting to keep up the pressure (so that for some seconds there may be a deceptive condition in which both pulse and respiration are present) yet a fatal termination is imminent. That this death from vaso-motor paralysis does sometimes occur in man, is shown by the very rapid running pulse mentioned in some cases that are on record, as preceding the fatal termination. Then it is seen that the work of the Commission gives no greater confidence in chloroform than was had before; and it scarcely needed the name of the Nizam of Hyderabad to impress facts that have been known to practical anæsthetists for a quarter of a century.

There are also certain other pathological features connected with the administration of chloroform to dogs, and possibly also to man. Ungar discovered that animals, especially canines, chloroformed for several hours at a time and upon successive days, showed upon autopsy, indubitable evidence of fatally degeneration of (1), the heart and liver, (2), kidneys and muscular structure, and (3), gastric and mucous membranes generally.\*

Strassman, as the result of independent experiments, corroborates Ungar, and sums up his researches as follows:

1. After chloroformization, in dogs, there can be demonstrated a fatty metamorphosis of the liver; the heart may partake of the same changes as a secondary result—other organs are seldom affected. The changes consist of true fatty degeneration and not of fatty infiltrations.

2. Subsequently to the usual chloroform narcosis, and when recovery therefrom has apparently taken place, a fatal result is occasionally observed to occur.

3. Inasmuch as in the fatal cases the heart changes were found to be particularly well marked, these latter may reasonably be assumed to have been the cause of death.

4. In non-fatal cases the evidence of degeneration changes are not found after several weeks.

5. These changes are particularly prone to occur in those in whom debilitating influences, such as hunger, loss of blood, etc., can reasonably account for the susceptibility to the undue action of the anæsthetic. In young and vigorous animals, a greater power of resistance counteracts a tendency to these changes.

\* *Virchow's Archives*, B. D. 115.

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Summed all up, we may conclude that the faults of chloroform are :

1. Danger of death from heart paralysis, most frequent, perhaps, in man.

2. From respiratory paralysis, more frequent in animals, and almost invariable in those that are feral, with two or three exceptions.

3. From paralysis of the vaso-motor centre, comparatively infrequent at all times, but probably less so in man than animals.

4. Chloroform requires a carefully graduated admixture of atmospheric air during administration, more than three and one-half per cent. being dangerous, and four per cent. fatal, to man. Most feral animals demand less air than man to attain a satisfactory result.

5. Despite the contrary assertion of the Hyderabad Chloroform Commission, dogs—the domestic variety especially—are more resistant to the vapor of chloroform than human beings; feral canines of different breeds exhibit varying resistance, usually less than domestic dogs that are not surfeited.

6. Cats are less resistant than dogs, and anæsthesia is fatal in ninety-five per cent. of the Angora breed. Among the *Leporidae* fifty per cent. of the cases of anæsthesia are fatal, and usually from shock inducing *heart rupture*. Ovines also, usually, bear chloroform but illy.

7. Horses, as a rule, if not subjects of amyloid disease, melanosis, or not too obese, usually bear chloroform well. I have, however, had no opportunity to witness the fatal action of this agent on equines.

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## AZOTURIA.

BY C. E. HADDOCK, M.D.V.

A Paper read before the Massachusetts Veterinary Medical Association.

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*Gentlemen*: I am inclined to think that azoturia as it appears in the stables of a horse railway company will, as a subject, not be uninteresting to you, because it has seemed to me that there are in one way and another certain facts which

should be considered as a part of the natural history of the disease which, so far as known, have never yet been so given in the books. Besides which, I have certain ideas as to the management and medical treatment of the animals, concerning which I should like to have your opinions and criticisms.

#### CONDITIONS OF ITS APPEARANCE.

It is said that azoturia always follows a more or less extended period of idleness with full grain feed, and in horses having a blocky conformation; but the circumstances under which it sometimes undoubtedly occurs in my practice leads me to doubt this, as I have witnessed it in horses that have been kept on grain allowances of grain feed while standing idle. In two positive instances horses (they were both mares) that had worked for a long time every day were taken on the road, one completely helpless in all four legs, the other in the two hind extremities only. \*

There are numerous instances to which horses that have been laid off from regular work, for some reason or other, have still been exercised for as much as two miles a day, then put to work and developed the disease in the usual way.

Cases of undoubted azoturia have been shown me in horses that were absolutely thin in flesh and not of the blocky conformation—which we have been told is an absolutely necessary foundation for an attack. And it is not a particularly uncommon thing to have horses taken as if with spasmodic colic while away from home treated for that, apparently recover, put in their own stall, and two hours afterwards fall completely helpless, sometimes in all four extremities. Even with a clear case of azoturia I desire to be plainly understood to mean, when I say a horse has azoturia, that the diagnosis has been confirmed in each instance by examination of the urine.

*The symptoms* vary, of course, with the severity of the attack, and to some considerable extent with the habit of the horse. But I must not detain you with any description of them; you are all familiar with them as shown by the horses and as printed in the books.



*Of the pathology* I do not know that I can say anything that will interest you. I should, however, like to say in this connection, that it is a matter of conviction with me that the helpless condition is a result of tonic spasm of certain of the voluntary muscles, more particularly and ordinarily of those of the gluteal and posterior lumbar regions, but rarely the anterior part of the body or of both these together.

*Paralysis*, so far as this condition is understood to mean inactivity of the muscles because of pressure upon some part of the cord or brain, in my opinion is not in it. The trouble is in the blood and must be eliminated from it. This office is naturally performed by the kidneys mainly. If the amount of the poison in circulation is not too great for them, the kidneys will strain it out and the animal will recover. If it is too great they will be over-worked, congested or even softened, and the animal will die.

A discussion with you of the treatment of azoturia is the real reason for my having written this paper, for I believe that some of my ways are somewhat different from those usually pursued. Bearing in mind what I have stated to you as being my pathological convictions, my whole aim is to relieve the kidneys as much as possible from the tremendous strain put upon them, and to so preserve them to the vital necessity of the disorder.

In the milder cases I give a ball of eight or ten drachms of aloes, and keep the animal as quiet as possible, with the slings loosely under him, unless he is fretted by them, and generally a good hot blanket over the lumbar region.

In the more severe cases I think it best to insist more firmly upon the slings, and with them my first treatment is to put the animal on his feet and keep him there if it can possibly be done by means of any known method. I then give a ball of ten drachms of aloes (and it should be remembered that these doses are not particularly large ones). The aloes is followed by the administration of sulphate of magnesia in eight ounce doses. In very severe cases the salts are repeated three times in twenty-four hours. They may be given in the drinking water or generally as a drink dissolved in

water. Hot blankets wet with mustard water are packed over the kidneys, and carefully attended to. Urine must be drawn at least twice in twenty-four hours, and if the animal is down he must be turned every six or eight hours regularly from the commencement. I also solicit an action of the bowels by the use every eight hours of an injection of soap-suds or warm water, and one ounce of glycerine added. Let him have all the cold water he wants. Bran mash may be given him to eat, with very little hay to keep him quiet. Stimulants, I think, spirits of nitre, etc., do harm in the first stages, but after two or three days they seem to have a good effect. If given at first they seem to increase the uneasiness. There seems to be no danger from super-purgation. I have never been able to produce it; I have given ten drachms of aloes and two pounds of sulphate of magnesia with scarcely more than a laxative action of the bowels. Fresh air in currents must be supplied in abundance. If the attempt to sling at first be unsuccessful I do not attempt it again for two or three days; the slings to be of the latest pattern, as poor slings do more harm than good.

When the horse is able to stand without the slings they should at first be placed under him at night, as there is some danger that the exertion in rising may cause rupture of blood vessels. This accident occurred in one case that I was interested in, causing the death of an animal that had practically recovered from azoturia.

The results in my practice from this treatment have been very successful, as high as ninety per cent. of the cases treated as described having recovered. In this connection, however, it must be considered that we have intelligent stable foremen who are able to recognize the disease promptly, and also understand its requirements in nearly all cases. The remedies are applied early, the necessary appliances are near at hand, which, of course, helps greatly to lessen the death rate.

As I am a new member of your profession, and this is my first attempt at writing a paper to be read before an Association of professional gentlemen, with years of practical experi-

ence in the treatment of this very disease, I shall hope to be criticised lightly, but to be discussed largely. If it shall be decided that I have been able to offer some suggestions that may help us on a little, I shall feel doubly repaid for all my efforts.

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## INSPECTION OF THE BRIGHTON ABATTOIR (BOSTON).

BY ALEXANDER BURR, M.D.V.

A Paper read before the Massachusetts Veterinary Medical Association.

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*Mr. President and Gentlemen :* Permit me to present to you a short account of my experiences as Inspector at the Brighton abattoir for the Board of Health of the city of Boston since October 1st to April 1st.

In passing, I may say that the Abattoir Company is a corporation who rent sections of their premises to the butchers of Boston for slaughtering purposes. Previous to my appointment, they had been accustomed to a simple mode of inspection, which consisted principally in an examination of the dressed meats. They were, therefore, unprepared for a careful professional examination of the live animals, followed by further inspection during the process of dressing.

The course I have pursued has been to make a tour of the different yards every morning, to gain an idea of the character of the animals, marking such as look suspicious so that they could be identified when dead.

At first, I was regarded by the butchers with more or less, perhaps natural, suspicion, especially when the carcass and viscera showed that anything was abnormal, and a desire was shown on my part that they should remain together.

In justice to the butchers, it must be said that now they do not intentionally buy diseased animals, or handle unclean or unwholesome flesh, but having them they desire to lose as little as is possible.

The rest of my time has been spent in walking through the different houses, observing the animals while being dressed, and afterwards, should any part of the viscera be

accidentally or intentionally disposed of, still another examination is made of the offal when, should anything of a diseased character be found, the carcass to which it belongs is immediately hunted up. I have sometimes found in the rendering house, lungs in an advanced stage of chronic tuberculosis, with abscesses, cheesy matter, grapes, etc. It then becomes my duty to find the animal from which they came. Having examined every carcass, and found one with a number of small grapes (tuberculous nodules) on the costal and diaphragmatic pleuræ which had not been removed, and finding no other carcass having such lesions, one should feel justified in condemning such, even if it looked and weighed well.

During the above time there have been killed 15,506 cattle, calves and sheep, among which there have been 880 cows. Of the above, there have been condemned ten cattle, thirty-one calves and five sheep. Of course, the above does not include animals arriving dead, of which the sheep amount to a large number.

Among the above condemned animals (that of the larger ones) have been found the following diseases, which I shall take the liberty to describe: tuberculosis, five cases; perinephoric abscess, one case; pylo-phlebitis, one case; anthrax, two cases; Texas fever, one case.

In addition to these I shall also describe a few cases of actinomycosis, of which there have been found seven. This lesion, as was at one time thought, is not confined to the facial region, nor is it necessary as an accompanying lesion. Of the three cases with lesions found elsewhere than in the face, one was in the tongue and two in the lungs, one of which was confined to the lung alone.

(a) That having lesions in the tongue. On running one's fingers down the lateral surfaces of the tongue it felt distinctly nodular, though not apparent to the eye: on cutting into these nodules they were found to be made of small centres of yellow granular matter, covered with fibrous tissue and the characteristic radiating fungoid growth was fully demonstrated in the usual way.

(b) This case presented a small tumor of left superior max-

illa, consisting of small points filled with yellow matter; an examination of the lungs was made, and found the left to contain numerous large abscesses, confined to one lobe, giving it a honeycomb appearance, the space being filled with yellowish puriform matter. This case was interesting from the fact that it might have been taken for a case of tuberculosis where it has gone on to the formation of large abscesses, and it would be sure to mislead one not competent to make a microscopic examination.

No facial lesions were found in this case, but in one lung there was a dense nodule made up mostly of fat, in center of which was a calcified mass of the fungoid growth; it had a contracted appearance, and was, in all probability, an arrested stage of the disease, in which calcification had set in. This, perhaps, may be looked upon as being an unusual result of the disease under consideration; but in this instance, at any rate, the diagnosis is as certain as this form of termination is rare.

Second on the list of diseases is pylo-phlebitis. This is quite a frequent trouble, all but two cases consisting of a few small abscesses, in which case simply the liver has been condemned. The following is a description of the above mentioned two cases.

(a) The liver contained a large abscess which had worked its way forward through the diaphragm and into the right lung, resembling a thick rubber tube, having a large abscess on either end, dumb-bell shape, the spheres of which were lodged in the lung on one end, and the liver and spleen on the other. Microscopic examination of the pus showed nothing but simply microcci.

(b) This case was what might be called general purulent pylo-phlebitis. The liver was much enlarged, weighing twenty-six pounds, and one mass of miliary abscesses; rest of organs all normal; animal was quite emaciated, weighing only four hundred and thirty pounds. The above was condemned.

Third on the list of diseases is Texas fever. Three cases of this disease have arrived on the grounds, two of which were dead and at once sent to the dead house.

The third case was that of an animal which had been shot at the Watertown Stock Yards, and carted into the slaughter house to be dressed; there was a question in my mind whether the animal was not dead, or almost so, before shooting. On cutting down the median line of the abdomen, the omentum covering the rumen was exposed, and was of a dirty gray color, and smelling badly, arousing my suspicions at once. The liver was secured, which was enlarged and yellowish; spleen appeared normal. Feeling justified in my diagnosis, the animal was condemned and at once sent to the dead house. The small number of cases of this disease is probably to be accounted for from the fact of it being the season in which Texas fever is not prevalent.

The fourth on the list of diseases is anthrax. Five cases of this most dreaded disease have arrived on the grounds, three of which died, and two were shot at the stock-yards and brought here with the intention of dressing them for meat. The first of these I will describe. An order came for the abattoir ambulance to go to Watertown for a steer which had been shot; it was ordered to be sent into one of the houses; knowing nothing of the case previously, I reached the house as they were cutting down through the median line of abdomen, exposing the omentum to view, which was almost black in color and had a very disagreeable gaseous odor, putrefaction having already set in, although the animal was supposed to have been dead less than half an hour. My suspicions were at once aroused; from the rapid decomposition and my having had three cases two weeks previously, I was somewhat on my guard for anthrax, and after further convincing myself, I ordered the animal sent to the dead house; the floors were then cleaned, and necessary precautions taken before dressing any more on the same spot. On post mortem examination, no marked lesions of an anthracoid nature were found, although in the form which I take to have been apoplectic, one would not expect to find any marked lesions. However, feeling sure of my diagnosis, scrapings were taken from the spleen and examined microscopically for the bacillus anthracis, with positive results, the rods having

begun to form spores from exposure to the air; this left no doubt as to the diagnosis. This carcass was ordered, along with hide, to be at once placed in a closed rendering tank and subjected to a prolonged cooking under a pressure of fifty pounds steam, which means a temperature of 300° F.

The fifth and last on list of diseases is tuberculosis. The detection and detention of such cases of tuberculosis as would seem unfit for consumption has been a part of my work in which I have taken much interest, and rigidly examined all cows slaughtered here, as the disease is most prevalent among them. Up to date, April 1st, twenty-nine cases have been discovered, showing lesion all the way from a mere nodule to the most advanced stage. Twenty-eight of the above number were cows, the twenty-ninth being a Northern ox; of these five only have been condemned; this means that these five had considerable thoracic and in some cases abdominal lesions.

On account of the differences of opinion as to the danger of contracting the disease from eating the flesh of those killed during its early stage, and where they have shown only trifling lesions, I have condemned only such as seemed to be the worst. Perhaps it had better be said right here, that the surrounding towns have no system of inspection.

Although my examinations show a considerable percentage of tuberculosis among our Eastern cows coming here, I am convinced that the disease does not prevail to anything like the extent that some of our members have reported, and possibly honestly, suspect. Below are a few statistics gathered at the abattoir.

There have arrived 880 cows, of which seventy were Western, leaving 810 Eastern. Of these 880, twenty-eight were found to have lesions of tuberculosis; of the seventy Western cows not one case was found; the percentage will read as follows:

Number of animals (cows and steers) killed	15,506
Percentage of Tuberculosis	.17
Of the 880 cows Eastern and Western	3.30
Of the 810 Eastern only	3.60
Of the 70 Western only	0.00

Of the twenty-nine cases discovered, there was not one among them but what showed some pulmonary lesion. I do not wish to be understood as thinking there is no such thing as localized tuberculosis; this has been demonstrated by inoculation, but from my experience it would seem that invasion most frequently takes place through the respiratory passage.

Of course, we must take into consideration that the cows coming here are generally thought to be sound, that is we do not get all the animals used in the cheaper grades of beef; thus it will be seen that the above statistics are not the actual statistics of the State; still, I think a fair average of abattoir statistics. An acquaintance with the subject of inspection, as reported in the current professional journals of the day, will convince any one unprejudiced that we are better off than any European country reported. That is, the percentage of tuberculosis among our animals is less than in any European country. The number of animals killed outside the abattoir can only be a very small number compared with the other, and it would be unfair to think that all such are diseased, or even one-fourth of them.

So far as can be judged from my short period of inspection even among our Eastern cattle, tuberculosis exists to a much less extent than among animals in the populous centers of most European countries, and among our Western bullocks, tuberculosis has almost no existence whatever, and this class of animals represent two-thirds of our cattle population.

I may add in connection with the foregoing, that in relation with the abattoir we have an establishment where fertilizers are manufactured, and dead animals of all kinds are received, such as horses and cattle, many of which are cows; these animals represent a fair average of the cows of our neighborhood; having died, the owners have seldom any disposition to hide them. I have examined all the cattle brought here and so far my record is as follows:

Received dead cows at abattoir from Oct. 1,	
'89, till April 1, '90	80
Number found with tuberculous lesions	6
Percentage	7.5



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No better opportunity, it seems to me, could be found to reach a fair average of the extent to which the disease prevails among our animals.

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## ANTIFEBRIN OR ACETANILID.

BY G. G. FERLING, V.S., Richmond, Ind.

A Paper read at the joint meeting of the Indiana and Illinois Veterinary Medical Associations.

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The list of antipyretics has been increased by the discovery of antifebrile properties, which are derived from aniline. The discoverers, Drs. H. Cahn and P. Hepp, for convenience named it antifebrin. It is reported to possess four times stronger antipyretic power than antipyrin. Antifebrin or acetanilid, as its name indicates, means acetic and aniline, and is prepared by heating aniline and glacial acetic acid in a flask provided with an upright condenser for forty-eight hours and then distilling.

Where acetanilid is obtained in an impure state, it then may be purified by crystalization from benzol, or boiling water. Acetanilid when pure is a white crystalized powder without odor, imparting a slight burning sensation to the tongue and melting at 101 degrees. It is soluble in 189 parts of cold water at 6. 42-8 F. and more readily soluble in ether and alcohol. From its alcoholic solutions it is not precipitated by water. It is also soluble in oils and benzine.

Antifebrin is a neutral substance, not acted upon by sulphuric or hydrochloric acid, having neither basic or acid properties. There can be no salts of which it may form a part; as in the case of most of the recent antipyretics.

### ACTIONS AND USES.

It has a depressing action on the heart, and has to be watched, because it is liable to do some harm. I believe I had one case where it had such a depressing action on the heart that I followed up with stimulants and *digitalis*.

It is eliminated by the kidneys. Windriner states that it is not found in the urine, as antifebrin or aniline, but con

siderable phenol was detected. Its action is slow, generally lasting about four or five hours, lowering the temperature in some cases from two to three degrees. Generally it leaves no bad effect. Some writers combine it with stimulants, claiming it does not act so harshly on the heart, but I see it is freely discussed as to what stimulant should be used; using spirits of ether with it, I see the *Druggists' Circular* claims it is liable to form another chemical, as yet unknown, but I have used it along with alcohol and whiskey. In some cases of influenza and distemper, where there is a difficulty in swallowing, I combine it with simple syrup and syrup of wild cherry bark.

Being there was, and still is, a great amount of catarrhal fever and influenza, I commenced using it freely this spring, and think I have had excellent results. In fourteen cases of influenza that I treated for I. H. Gaars at his stock farm, Lewesville, Md., amongst some of the brood mares there was a filly by Onward, also the three-year-old stallion Gambyion, two-year-old record of 2:40 $\frac{3}{4}$ ; it was used with good success. In seven cases of influenza that I treated for Harman Shofer, a horse dealer in Richmond, Indiana, amongst which was one case where the temperature ran up to 107 $\frac{1}{4}$ °, I began on four dram doses every four hours, and by the time the second dose had acted—that is meaning three hours later—I found the temperature down to 104°. Kept up all that night, and next morning the temperature was 102 $\frac{1}{4}$ °; kept it up all that day and stopped that evening, when again the next morning the temperature was 104°. I then gave another four dram pill, followed up in an hour with some aconite, and in three hours the temperature was then 102°. I then stopped giving acetanilid that evening. I was then called to the country, and when I came back one of the hands came over and said that the horse had the colic and was rolling and tumbling. I went to see him, and found him in pain; gave hypodermic injection of four grains of morphia, injection of water with a couple of ounces of glycerine, and in about twenty minutes he rose up and went to eating, and kept improving. After three more days I discharged him.

In a case of pneumonia, the horse Geo. Hays, a three-year-

old pacer, with a trial of 2:20, then belonging to S. Railslads, of Indianapolis and kept at Centerville; Ind., the temperature was up to  $104\frac{1}{2}^{\circ}$ . I gave acetanilid, about three per day for a few days, giving digilatis along; followed up with muriati amn, whiskey and glycerine. He was sick twenty days, improved nicely and the driver, John Voss, was to see me Saturday, saying he went a mile in 2:29 $\frac{1}{2}$ , so it left him in good shape.

In three cases of rheumatism I used it in four and five dram doses; found it lowered the temperature, and seemed to act as an anodyne, and after three or four days the patient was better, and able to walk and stand, as they all kept lying most of the time. In a number of cases of strangles I used it, and in one case of laminitis, when the temperature was up to  $104^{\circ}$ , I used it with giving aloes and applying a cold application to the feet. Externally I use it by sprinkling on old unhealthy sores, when they generally improve and do nicely, as it seems to form a kind of coating over them.

In fact I could state many more cases where I used it, and think it is a great reducer of temperature, which surely must make the patient feel some relief.

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## PNEUMONIA.

By G. W. BUCKNER, D.V.S., Rockville, Ind.

A Paper read at the joint meeting of the Indiana and Illinois Medical Veterinary Societies.

*Mr. President and Gentlemen:*—Pneumonia is an acute febrile disease, characterized by inflammatory consolidation of some portion of one or both lungs.

It is true, in a sense, that pneumonia and inflammation of the lungs are synonymous terms, but the latter expression by no means covers the whole pathology of the disease; indeed, a careful examination of the etiology and clinical features of pneumonia would suggest its being placed in our nosology amongst such diseases as acute rheumatism, influenza, etc., the inflammatory pneumonia in each of these diseases being

but the local expression of a general state, and only exceptionally proceeding beyond hyperamia and simple exudation.

#### ETIOLOGY.

*Individual Predisposition.* No age is exempt from pneumonia, but the disease is most common during the active stage of life. Depressed vitality, overcrowding in bad, ill ventilated stables, renders the patient more prone to its attack. A plethoric state also favors attack. Cold seasons, great variation of temperature, rough, cold winds bring about pneumonia and account for its epidemic form. An epidemic of influenza is most likely to be followed by pneumonia.

Pathologists also state that the bacilli pneumonocci is a most fruitful cause, but as this theory has not been substantiated as being *the* cause, I will just say that it is a point worthy of investigation.

*Pathology and Morbid Anatomy.*—The morbid anatomy of pneumonia consists of an acute hypermia of the affected lung, resulting in an exudation into the alveoli and forming a film upon the pleural surface. This film coagulates and fixes the lung in an immovable state of expansion or hepatization. Here all the severity of the disease is manifested, and with its attainment the disease proper is at an end.

The local consequences of the disease do not thus terminate, however, with the first consequences of extravenuous influence. Coagulation of the exuded product, a chain of secondary phenomena commences, partly chemical and partly vital, attending their liquifaction and reabsorption. Thus, after a usually very short time the malady is ushered in abruptly with rigors, rapidly mounting and maintaining high temperature. In the second to fifth day the local signs present themselves. On the seventh to the tenth day the temperature usually falls, but the local lesions have yet to be removed. Pneumonia is thus artificially divided into three stages:

The first stage begins with the rigors and ends with the appearance of definite signs of consolidation. It may be termed the stage of initial fever with pulmonary engorgement. If death should occur at this stage, the affected lung is found

to be in a condition of inflammatory œdema, heavy pitting on pressure and crepitating when cut.

The second stage is that of pulmonary hepatization or red hepatization. The affected portion is bulky, heavy, solid to feel. On section the lung is firm and dry, presenting a red granular surface which is readily broken and sinks in water.

Third stage is that of resolution or gray hepatization. This is marked by falling of temperature. The exuded product now rapidly undergoes molecular degeneration, the fibrinous element becoming completely emulsified, and the corpuscles more or less broken down by fatty changes.

*Termination.*—Resolution is a most favorable and common termination. Abscess, gangrene and chronic pneumonia may arise.

*Symptoms.*—The general aspect and symptoms of pneumonia on the third or fourth day of attack are usually such as to leave but little room for doubt as to the nature of the case. But in the early stage I have been frequently at a loss to know if it was going to be a case of pneumonia or pleurisy, a point of much importance from a therapeutic standpoint.

The disease is usually ushered in with a chill, staring coat, anxious expression, febrile symptoms, cold extremities. Thirsty as a rule, patient retains standing posture, legs separated as if to give room for lungs to expand. Temperature ranging from  $104^{\circ}$  to  $106^{\circ}$ . Pulse accelerated and very variable, numbering from 70 to 90. The artery is hard and full or may be soft and full, owing to plethoric condition of patient. Mucous membrane congested. Appetite and secretions diminished.

*Physical Signs.*—Dullness on percussion over hepatized portion and a loss of respiratory murmur. Just before hepatization sets in you get the crepitant rales. In the second stage bronchial breathing, which is very characteristic. In the third stage the bronchial breathing gives place to crepitations of a moist, coarse character. Pleural friction is heard if complicated with pleurisy, which I think is in most cases.

*Treatment.*—Pneumonia being a self-limiting disease, the only form of treatment indicated is to try and assist nature

and treat the symptoms as they arise. In the first stage I find great good in vesication, cantharides blister over region of chest. It has a tendency to abort the lesions and protect your patient from pleurisy.

Support the patient's strength with stimulants and tonics, say alcohol and quinine, or ammon. carb., gum camphor, gentian, ginger made into a ball with simple syrup. Equalize the circulation by blanketing; bandage the legs; allow a liberal supply of fresh water containing some nitrate of potash; a well ventilated, roomy box stall; good nutritious food of a laxative nature, is the usual treatment for an ordinary case of pneumonia. In some cases during convalescence, the heart is weak and irregular; the patient should get heart stimulants, say digitalis, for in those cases there is a tendency to heart clot.

While some cases do well on stimulants, others would do better on sedatives. This can only be governed by the symptoms of the different cases. If there is a disease in the equine species that should be treated individually more than another, it is pneumonia.

Thanking you for your kind attention, I will now submit my remarks to your criticism.

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## VETERINARY HYGIOLGY AND ANTISEPTICS.

By THOMAS M. BUCKLEY, D.V.S., Brooklyn, N. Y.

A Paper read before the Long Island Veterinary Society.

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*Mr. President and Members:*—Being accorded the privilege and pleasure of reading before the Society this evening a paper on Veterinary Hygiology and Antiseptics, which, to say the least, can be but an apology, as it is by far too great and important a subject to attempt to do anything like justice to on such a occasion as this. But increasing observation satisfies me that there remains a vast amount for us as veterinarians to accomplish in order to carry out hygienic conditions.

Good quarantine laws should be enforced wherever and whenever an outbreak is discovered, and the present Bureau

of Animal Industry and its efficient officers deserve all praise for the noble work they are quietly but surely accomplishing by stamping out, thereby protecting this great nation, from contagious pleuro-pneumonia and tuberculosis, which comes on insidiously and frequently makes considerable progress before it is observed and the necessity for recognizing the existence of them was never greater than the present day.

The illimitable demand for animal food by rich and poor is perhaps in no part of the world greater than in the United States, and when we take into consideration the variety of diseases which are transmitted to man from the animal kingdom—one especially, *tuberculosis*, not only may it be transmitted to man but to any species of animal that partakes of raw flesh in which is contained tuberculous matter—and when we take into consideration the vast amount of milk that forms the principal daily article of diet for the infant and invalid, whose condition and low resisting powers renders them especially susceptible to absorption from milk thus contaminated, it is no wonder our mortality by tuberculosis is so great as statistics show for the city of Brooklyn:

From	January	1st	to	December	31st,	1880—1736.
“	“	“	“	“	“	1881—1754.
“	“	“	“	“	“	1882—1806.
“	“	“	“	“	“	1883—1847.
“	“	“	“	“	“	1884—1913.
“	“	“	“	“	“	1885—1995.
“	“	“	“	“	“	1886—2085.
“	“	“	“	“	“	1887—2026.
“	“	“	“	“	“	1888—2051.
“	“	“	“	“	“	1889—2055.
“	“	“	“	June	7th,	1890—1018.

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20,286

I firmly believe that this great mortality can be influenced by the co-operation of the veterinary profession in reporting any suspicious case to the inspector of his district, thereby aiding the Bureau, whose staff is entirely inadequate for the amount of territory to be covered.

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**STABLE HYGIENE.**

Under which head I will briefly enumerate a few essential points. They should be spacious, well ventilated, lightsome, thorough drainage and free from dampness; no bedding or manure should be permitted to remain in the stall in the day-time, and unless absolutely unavoidable, should a sick animal be treated in cellar stables. Stables should be lime washed at least four times a year and flooring washed down weekly during the summer months with one of the standard disinfecting solutions, as organic impurities usually exist in the air at all times in the form of bacteria, but especially more so where the air is loaded with impurities resulting from decomposition, and I believe that the majority of the ultimate results of our surgical cases would be far more successful if we adopted a rigid antiseptic system, for this is truly an antiseptic age, and as veterinarians, the sooner we adopt such principals the better will we be able to combat successfully operations that now frequently fail to terminate as favorably as we desire, for it is well established by this time in human practice that one of the most important factors mentioned as having of late years influenced the results after gastrotomy, enterotomy and ovariectomy, is the application of the antiseptic treatment before, during and after the operation, and there remains no reason why we should fail to advocate the strictest antiseptic precaution, which we are morally and legally bound to respect in justice to our dumb brute creation, the public and our profession, for we are well assured, by their use peritonitis and pyæmia is extensively averted.

We are familiar with the occasional results of puncturing in tympanitis, likewise from use of the hypodermatics, which may be attributed to the septic condition of instruments, which it may not be out of place at this time to mention a few antiseptic agents that are easily obtained and the majority of them being inexpensive; carbolic acid, biniodide of mercury, bi-chloride of mercury, iodoform, boracic acid, chloral hydrate, peroxide of hydrogen, creolin, and to summarize briefly we may divide the antiseptic method into four (4) divisions:



- 1st. Preparation of the animal.
- 2d.        "        "        "        operating room.
- 3d.        "        "        "        instruments.
- 4th.       "        "        "        surgeon.

By strict adherence of the surgeon to aseptic principles, his painstaking and labor will not be in vain, for I cannot impress too deeply that the secret of success is in proportion to the extent of our hygienic conditions and surroundings.

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## CLINICAL DEPARTMENT.

*"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."*—VETERINARY RECORD.

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### OMENTUM HERNIA IN A YEARLING COLT.

BY J. S. CULBERT, V.S., Portland, Ind.

I was called on May 4th to see a yearling colt which had been castrated on May 3d. When I arrived at the farm I found the colt in a lot walking around very uneasily, with the omentum protruding through the cut in the scrotum on the off side; it hung down so far that it touched the ground as he walked. I found the pulse increased to 85; temperature  $102\frac{2}{5}^{\circ}$ ; respirations accelerated; colt in rather a stupid condition. The first thing done after my examination was to cast the colt; the omentum was one mass of coagulated blood and serum. I examined the scrotum by introducing my finger up into the inguinal canal and into the opening in the peritoneum. Line of treatment: I took an ecraseur and severed the protruded omentum as close to the scrotum as possible; then I washed and cleansed the parts well with a bi-chloride solution, one to five hundred; then I crowded omentum back into abdominal cavity; then a plug of oakum, well saturated with the bi-chloride solution, was crowded up into the canal against the opening in the peritoneum and left there for twenty-four hours; then took it out. I gave it bran mashes and enemas of warm water two and three times

a day ; I put it on a sedative of four drops of aconite every three hours, and kept the colt from lying down for the first forty-eight hours. The colt made a good recovery and seems as sound and as hearty as ever.

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### EPILEPTIC FITS IN A HORSE.

BY R. W. ELLIS, D.V.S.

On June 20th I was called to see a roan horse fifteen years old, said to be suffering with colic. When I arrived I could discover no symptoms of colic and got the following history :

“Night before last he was taken with colic and I gave him a colic mixture that the druggist keeps, but he was quite a while before he got quiet. He would shake all over when he was down, but after a while he suddenly became quiet and got up all right, and I left him. He went to work yesterday, but this morning he laid down and “shook” again, so we left him in.”

That is the history as I got it. I then took his temperature which was 102° F., pulse about normal, and otherwise apparently all right. The attendant informed me that he defecated and micturated in a natural manner and as far as he could discern the quantity and consistency of the excrement was about normal, but that he did not eat well, so I prescribed a tonic and left him, saying I would call again next morning, thinking that whatever it was that was lurking in his system would develop itself by that time. But that evening about seven o'clock one of the attendants came to me very much excited and stated that the horse was worse, and was having “fits.”

I hurried to the place, and the *second* time found the horse standing, apparently all right. In a few minutes, however, he began to evince signs of restlessness and the attendant said : “Now, doctor, that's the way he did before the other “fit.” In a moment later he went down very suddenly, and had spasm after spasm, in rapid succession, during which all his muscles became rigid and tense, even to the posterior rectus of the ball of the eye, causing the membrana nictitans to

dash across the eye as in tetanus, then the eyeballs would roll and had a peculiar vacant stare. There was also a spasmodic contraction of the auricular muscles, causing convulsive movements of the ears. This condition lasted from eight to ten minutes, when it suddenly ceased, and the animal raised his head and looked up as though nothing had happened, and a few minutes later got up and urinated naturally.

In about twenty minutes there was a repetition of the above symptoms, lasting about the same length of time; on the cessation of which I administered (per month) chloral hydrate one and one-half ounces and lobelia two drachms (dry) in two gelatine capsules. This was given about eight o'clock and about ten o'clock he had another fit of convulsions, but this time very light and lasting but a short time, soon after which he went into a somnolent condition and seemed comfortable, so I left him for the night. The next morning he seemed rather dull and did not care to eat much (temperature  $101^{\circ}$  F., pulse normal) so I ordered the continuation of the tonic I had prescribed the day previous. This was done and the horse regained a good appetite; in fact, at the end of twenty-four hours he was quite ravenous. He improved steadily in strength and energy and in a few days resumed his accustomed work—which is drawing a street sprinkling wagon with another horse—and has had no further trouble up to date.

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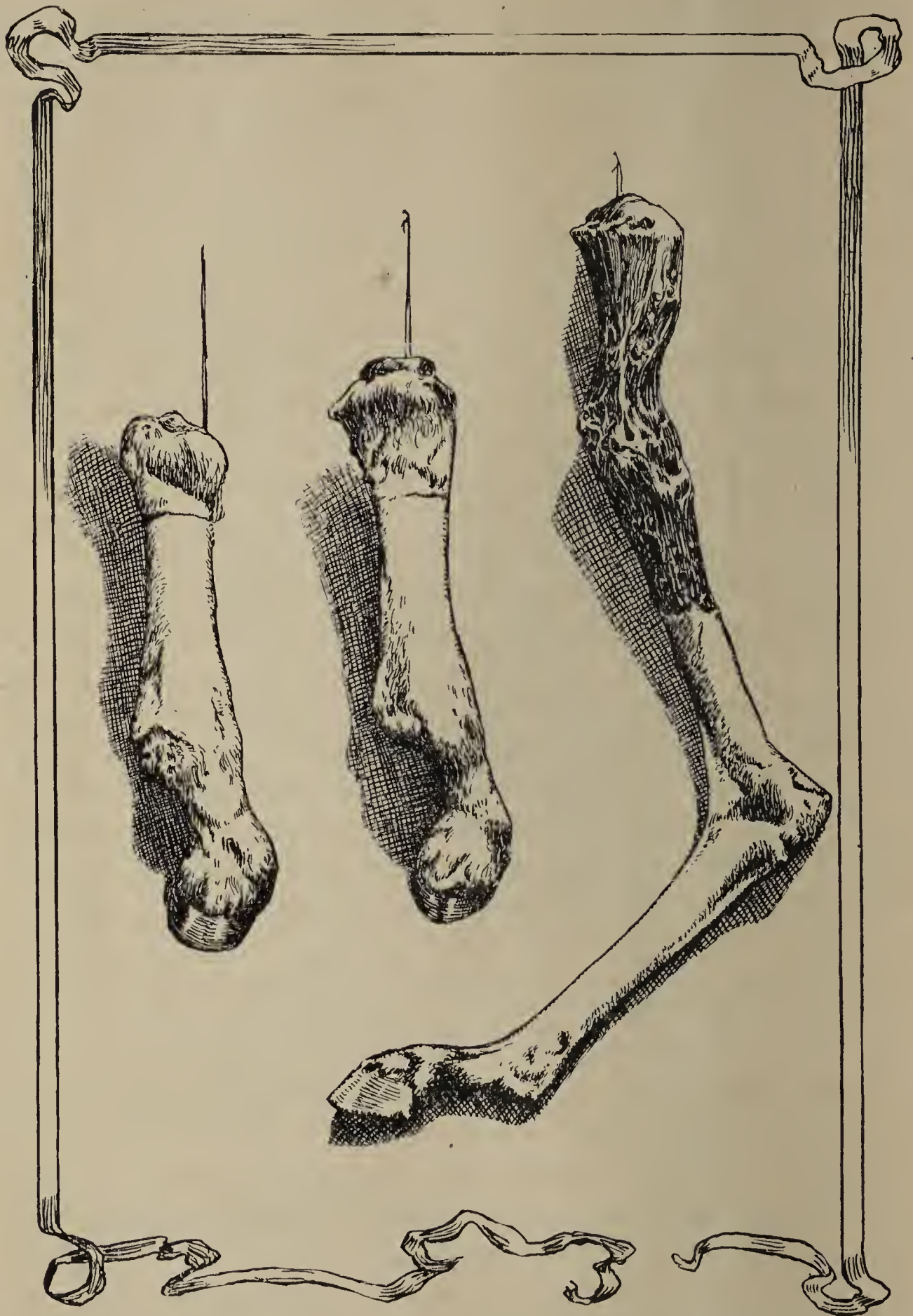
#### PECULIAR DISTOKIA IN A MARE.

By C. H. PEABODY, D.V.S., Providence, R. I.

I was called to see a mare in difficult labor about 6 p.m. and found a large animal in pains.

HISTORY.—She commenced to have pains in the morning and the owner supposed she would come all right. On examination found it to be a thigh and croup presentation and with the foetus on its right side.

MODE OF OPERATION.—Tried to push the foetus forward, to get a cord around its hind extremities, but could not. Found the extremities immovable. In trying to flex them they were as bone and could not be moved. Taking a hooked knife, I cut over the tibial articulation, got a cord around the



hock and with some pulling and cutting got the lower third of the extremity out, then the tibia and femur.

I then cut into the abdominal cavity and emptied it of its contents. Making another opening through the posterior open-

ing of the pelvis, passed a cord through that and brought it out and with a hook in the back and two good men pulling tried to relieve the mare, but could not.

Then I tried to get the other hind extremity but could not move it at all. I then cut down on the point of the ischium and passed a cord over it. With good strong pulling I separated it from the sacrum through the symphysis pubis. Then cutting down over the coxo-femoral articulation, passing a cord around the remaining portion of the pelvis and keeping a strong pulling on it, I succeeding in cutting and tearing it off at the lumbar vertebra, leaving the nigh hind extremity attached to the muscular tissue.

Then getting a cord over the head of the femur, by pulling and cutting I separated the muscles and removed the extremity.

Then the difficulty was explained. The joints were completely ankylosed. This explained why it was impossible to move the legs. I examined the leg I had first removed and found it in the same condition. After cutting the ribs and shutting them together I removed the rest of the foetus quite easily and found that the forward extremities were deformed.

Gave the mare ℥iv whiskey and ℥ii tinc. opii, clothed her warmly and removed her to a dry stall. Next day her temperature was 301°, pulse 60, respiration 18. I gave ℥i quinine and ℥ii whiskey every two hours.

The mare continued to improve and is now turned out to pasture.

CHAS. H. PEABODY.

N. B.—The cut shown herewith gives a good illustration of the extremities. The one on the right is the nigh hind leg, that was removed whole from the pelvis. The ones on the left are the forward extremities from the carpus.

C. H. P.

#### LARYNGEAL PARALYSIS OPERATION.

By THE SAME.

There was brought to my stable a bay horse seven years old, weighing about twelve hundred pounds.

Performed tracheotomy and he wore a tube until Feb. 2d,

when it was removed and the opening allowed to close and became thoroughly healed before operating.

On the 3d of March, the horse being prepared, he was cast and given a mixture of two ounces each of ether and chloroform and in three minutes he was ready for operation. On being turned on his back the directions recommended in Fleming's work were followed generally and in twenty minutes the horse was ready to get up. In twenty minutes more he had recovered from the effects of the anæsthetic and got up all right and was walked into a stall.

On March 4th, the temperature was  $102^{\circ}$ , pulse 50; March 5th, temperature  $103^{\circ}$ , pulse 52. I washed the wound and gave three quarts of oatmeal gruel per rectum. He looked bright, and there was some smell from the wound.

March 6th, temperature  $102^{\circ}$  pulse 48. He looked well and was given two quarts of water, which he drank well. There was but little discharge through wound, which was not much swollen and discharged but little.

On the 7th of March the temperature  $101^{\circ}$ , pulse 40. He drank three quarts of water in the morning and two quarts of bran mash at night. His wound looked well, with but little discharge.

March 8th, his temperature was  $100^{\circ}$ , his pulse 38. He drank three quarts of gruel and had no discharge through the wound. It was dressed with a solution of permanganate of potash, and had some smell. At night he was given one quart of steamed oats and two quarts of bran mixed in a soft gruel.

March 9th, temperature  $100^{\circ}$ , pulse 30. He looked well, the wound was closing and discharged but little. He was fed four quarts of steamed oats and bran and given about one-half pound of steamed hay in the morning. Water as required. At night he was fed three quarts of oats and bran steamed and one-half pound of steamed hay. He ate well and had no discharge through the wound.

On March 10th his wound looked well. He looked bright and ate and drank easily, and but little ran through either the wound or the nose.

March 11th and 12th he was the same as on the 10th, his wound continuing to heal well. The horse was discharged from the hospital.

April 4th, he made some noise but works well without a tube, but there is some roaring still.

CASE NO. 2.—On February 25th was brought to my hospital a brown thoroughbred stallion. He was operated on in the same way as the above, and the same treatment was pushed in a general way. This animal was a confirmed roarer and was bought in Kentucky as a roarer. When brought to me he would roar when being trotted by the halter and if ridden at a trot or gallop would fall down.

He was discharged from my hospital May 7th and on May 9th the owner commenced to ride him and he has been used every day since. He trots and gallops at full speed with a man of 160 pounds weight and the noise is so slight that it cannot be heard at a distance of fifty yards, and is growing less every day, so the owner says.

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#### TEMPORAL DENTAL CYST.

By WM. R. CLAUSEN, V.S., Waupaca, Wis.

A one-year-old colt with a running sore, of about two months' standing, at the anterior part of the base of the ear, was brought to me for treatment. Below the ear was noticed a small, hard, slightly movable tumor, and on introducing the probe, a bony substance was struck. The tumor was carefully dissected out, but on reaching the base, which was smaller than the top, it was found to be attached to the zygomatic process at the squamosal bone. A little effort dislodged it and it presented, besides the protuberance by which it adhered, another, perfectly smooth.

The sides were covered with a calcareous layer, which could easily be removed by the finger nail. The fore portion or top was smooth, but marked by a groove about one-eighth of an inch deep, giving it the appearance of an imperfectly formed molar, about the size of a large hickory nut.

Mr. Dahlstrom, a student of mine, removed a similar

tumor, situated at about the same place, from a ten-year-old horse, that had suffered for eight years and for some years would not allow a bridle to be put on his head. This was a nearly perfectly shaped molar with a blackened appearance.

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## SOCIETY MEETINGS.

### LONG ISLAND VETERINARY SOCIETY.

A regular meeting of the Long Island Veterinary Society was held on June 18th, 1890, at No. 74 Adams Street, the President, Dr. George H. Berns, in the Chair.

The following members were present: Drs. Berns, Bowers, Newman, Buckley, Breslin, Housman and Pendry.

The minutes of the previous meeting were read and approved.

The Board of Censors made no report.

The Committee on State Legislation reported progress.

The next order of business being the reading of papers, Dr. Thomas M. Buckley read an interesting paper entitled, "Veterinary Hygiology and Antiseptics."

Quite a discussion followed the reading of the paper, after which a vote of thanks was tendered to the essayist.

A communication from Dr. E. Hanshew, Jr., was read, in which he tendered his resignation as a member of the society.

The communication was received and the resignation accepted, and the Secretary was instructed to notify Dr. Hanshew of its acceptance.

It was moved by Dr. Pendry and seconded by Dr. Bowers, that hereafter essayists should furnish duplicate copies of their paper.

Dr. George H. Berns was appointed essayist for the next meeting.

The meeting then adjourned, the society to meet again on the third Wednesday in September.

D. S. BRESLIN, D.V.S., *Secretary.*

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### MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Association was held at No. 19 Boylston Place, Boston, June 25th, 1890.

The President and Vice-Presidents being absent, Dr. W. Bryden was elected chairman for the evening.

The members present were: Drs. W. Bryden, L. H. Howard, A. Marshall, W. Peterson, J. M. Skally and C. Winslow.

The essayists present were: Drs. Hadcock and Burr.

Honorary member, Dr. J. H. Stickney.

The question of Dr. K. Winslow's resignation was considered again. After



a good deal of discussion Dr. Peterson moved that if said Dr. Winslow still be in arrears at the next meeting he be expelled, the Secretary to notify him at once. Motion seconded by Dr. Marshall. Carried.

Dr. Hadcock then read a paper upon azoturia.

The following discussion ensued :

Dr. Howard agreed with the essayist that a horse need not be even plethoric or lying idle in order to have azoturia, and cited an instance in his practice of a mare then in flesh working on a coal cart, taken while at work, without having previously laid off.

Dr. Winslow said that his cases had all been of the usual character.

Dr. Skally had never had a case in a mare in his practice.

Dr. Peterson agreed with the essayist, that horses can be taken with azoturia while working, without having any previous state of idleness.

Dr. Marshall has generally seen this disease in horses in good condition after a few days rest.

Dr. Marshall then asked the essayist if the atrophy of the muscles in the anterior crural region, so often seen as a result of azoturia, generally recorded? Dr. Hadcock said in his experience yes.

Dr. Stickney said his experiences had been with horses in good flesh. He then gave an instance of a mare having symptoms simulating those of azoturia, but she was advanced in pregnancy and finally foaled in the slings, afterwards making a good recovery. She had the same trouble in two subsequent pregnancies, and both times foaled in slings. Pregnant women often have trouble with their kidneys, and is it not possible that mares may have a similar disturbance? He also spoke of the conformation of a horse being deceitful often in judging of the condition; an angular, loosely coupled horse may be in better flesh than a compact, round turned one, and yet his appearance may be the reverse.

Dr. Bryden then spoke of the treatment of cases of azoturia. In his opinion, the medicinal treatment was of less importance than the mechanical management, such as slinging, or, if the animal was unable to rise, the turning over frequently, and general attention to his comfort.

Dr. Marshall then moved that the Association tender Dr. Hadcock a vote of thanks for his paper, and that he be elected a member. Seconded by Dr. Winslow, and carried unanimously.

Dr. Alexander Burr then read an account of his experiences as meat inspector for the Boston Board of Health at the Brighton abattoir. The following discussion ensued :

Dr. Howard stated that his personal experience with cattle was very limited, but hoped that Dr. Burr was right in his small estimation of the amount of bovine tuberculosis in the locality; he was afraid, however, that it existed to a greater extent than the essayist judged it to, from what some of our other practitioners say, in whom he has every reason to feel confidence.

Dr. Winslow's experience with tuberculosis was so limited that he had nothing to say upon it.

Dr. Peterson thinks that a good many animals that are tuberculous are not sent to the abattoir; doubted if fifty per cent. of the creatures with the disease were sent to the abattoir. He then told of a slaughter house out in the country,

not a great way from Boston, which he happened to visit one day, and where he saw "strange sights."

Dr. Marshall said he thought there was less tuberculosis around Eastern Massachusetts than many of our members would have us believe.

Dr. Stickney said he had but little cow practice, but he had seen a good deal of bovine tuberculosis. He thought that Dr. Burr's statistics were not very valuable towards showing the prevalence of the disease around here, as the beef he inspects comes chiefly from the West. Dr. Burr's statistics are only correct as far as the animals brought to the Brighton abattoir are concerned, but do not prove a great deal beyond that. It is not to be wondered at that tuberculosis should exist in many of our well-bred dairy herds, as it has been carefully propagated there for years.

Dr. Marshall then moved that the essayist be given a vote of thanks for his paper, and be elected a member of this Association. Seconded by Dr. Howard, and carried unanimously.

Meeting then adjourned.

AUSTIN PRTERS, *Secretary.*

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## JOINT MEETING OF THE INDIANA AND ILLINOIS VETERINARY MEDICAL ASSOCIATIONS.

(Continued from page 211).

The morning of the 5th was spent in an enjoyable and profitable manner by visiting some of the largest stock farms in the vicinity of the city.

In the evening at 8 P.M. the meeting was called to order, and Dr. Ferling read his paper on antefebtrin or acetanilid.

In the discussion following Dr. Bell mentioned that he had used the drug in much larger doses, six drachm doses three times daily.

Dr. Williams had used it advantageously in pink eye, giving one ounce as a dose every twelve hours. This generally reduced the temperature before twenty-four hours. Could only recall one case of heart complication, and had used it in connection with nitrous ether, giving the latter in one ounce doses every three hours. Has found acetanilid to control action of heart rather than interfere with it.

Dr. Knowles: Does the drug cut the course of pink eye short? The essayist thought not. Dr. Williams thought it did, but was not prepared to say that it actually did.

Dr. Bell: How does antefebtrin reduce temperature? The essayist said by its action on heart, while Dr. Bell thought it was more likely due to some power it possessed of destroying the fever-producing microbe.

In answer to a question by Dr. Curphey, the essayist said that half ounce doses acted something like morphine in giving ease to the patient.

Dr. Knowles enquired of essayist if he had ever tried good nursing and no medication in cases where temperature was high? No.

Dr. Knowles mentioned a case of single pneumonia where temperature was 108°. He gave three one ounce doses of the drug without any change. He stopped giving medicine and patient improved.

Dr. Buckner then read his essay on pneumonia.

In discussion of Dr. Buckner's paper, Dr. Knowles enquired if essayist thought there was much use in medicating. No; more could be done by giving patient good hygienic surroundings.

Dr. Bell: Does quinine, antepyrin, etc., help in treatment of this disease? Yes, by stimulating.

Dr. Gustmeyer, M.D., one of Terre Haute's ablest physicians, mentioned some cases of pneumonia in the horse which he had seen some years ago. How, while kept in a stable where disease had been contracted, numbers died, but on being removed to a field where good air was obtainable, all that were then afflicted recovered.

Dr. Thompson moved a vote of thanks to Drs. Paquin and Williams. Carried unanimously.

Dr. Williams, being connected with the AMERICAN VETERINARY REVIEW, made an appeal for the complete papers read before the Indiana Association, in return for which the REVIEW would give the Association reprints of their meetings at a nominal price.

Moved by Dr. Macaulay, seconded by Dr. Buckner, that Dr. Williams' proposition be accepted. Carried.

Following this was the naming of the essayists for the next meeting, and because of the United States Veterinary Association having its meeting in Chicago next September it was moved by Dr. Thompson, seconded by Dr. Ferling, that the next meeting of the Indiana Association be held in Indianapolis on the first Wednesday in January next.

Moved by Dr. Buckner, seconded by Dr. Bell, that the next meeting be commenced on Wednesday night and continued on Thursday morning and evening.

Moved by Dr. Mylne, seconded by Dr. Driggs, that a vote of thanks be accorded Drs. Knowles and Thompson for their courtesy on Thursday morning. Carried.

On motion of Dr. Macaulay the meeting adjourned.

H. R. MACAULAY, *Secretary*.

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#### OHIO VETERINARY MEDICAL ASSOCIATION.

The seventh semi-annual meeting of the Ohio Veterinary Medical Association was held in the Council Chamber of Dayton, Ohio, on July 16th at 8 P. M.

The President, Dr. J. W. Butler, opened the meeting with a brief address and said he regretted to see such a small attendance, which, however, might be partially attributed to the excessively hot weather.

The minutes of the last meeting after being read were amended and adopted.

The Secretary presented the correspondence to the meeting and it was found that some of the members whose addresses had been sent to the Chief of the Bureau of Animal Industry had not yet received copies of the last report of said bureau. The Secretary was directed to endeavor to rectify the error.

A letter from Prof. Liautard, offering to publish free (or at a nominal cost) a copy for each member of our Association, of the full minutes of our meetings with the essays, etc., was discussed, and it was decided that all the American veterin-

ary journals should be allowed an equal chance to publish the transactions of our Association.

A motion was passed accepting the resignation of Dr. Stewart of Mt. Victory, and granting him a certificate of honorable withdrawal.

Dr. W. H. Gribble of Washington Court House, Ohio, now read an able paper on "Thoracic Choke," confining his remarks chiefly to the horse. He cited a large number of cases from his practical experience and discussed the causes, symptoms and most successful modes of treatment at some length, also the varied conditions revealed to him (rupture of œsophagus, etc.) on post mortem examination where the cases had proven fatal. The paper proved highly interesting and the discussion following it was participated in by almost every member present.

Dr. G. W. Butler of Circleville, Ohio, read a paper on "Rabies and Strongylus Tetracanthus as a coincidence in the horse." The paper evidenced considerable scientific research on the Doctor's part and it drew forth hearty applause and an interesting after discussion.

Dr. Shepard now read a paper entitled "A few Practical Hints," by Dr. S. R. Howard of Hillsboro, Ohio. The paper was well received.

The Board of Censors was abolished and those portions of the Constitution and By-laws relating thereto were amended.

Dr. G. W. Butler moved the adoption of resolutions severely censuring the Ohio Board of Live Stock Commissioners for their negligence in allowing the disposal of glandered horses in Piqua County, Ohio, and requested that a copy of said resolutions be recorded in the minutes of our meeting, and also sent to said Board of Live Stock Commissioners and to the Governor of Ohio.

A vote of thanks was tendered the City Council of Dayton, for the use of the Council Chamber.

The Secretary was ordered to urge the members of our Association to attend the meeting of the United States Veterinary Medical Association at Chicago.

The meeting then adjourned.

Most of the members remained over in Dayton the following day and were escorted through the Soldiers' Home by Dr. Howe, and also witnessed an operation upon a "roarer," at Dr. Shaw's Veterinary Infirmary. Dr. G. W. Butler administered the chloroform, while Drs. Shaw, Wight and Gribble assisted one another in the excision of the left arytenoid cartilage and thyro arytenoidean ligament.

W. J. Torrance, V.S., *Secretary*,  
Cleveland, Ohio.

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## CORRESPONDENCE.

### INQUIRY.

ASHLAND, OHIO, June 19, 1890.

*Editor Veterinary Review:*

I wish to inquire of some of the readers of your journal concerning the treatment of the condition in foals described

by Williams, (page 160, fifth edition), as "Scrofulous Ostitis."

A great number of cases constantly come under my observation during the spring and summer months, and the treatment either for the prevention of the escape of urine from the pervious urachus or the reduction of the inflamed and swollen condition of the joints is not always entirely satisfactory. The method that I have adopted for the closure of the urachus is as follows: a small flat needle armed with a catgut ligature, prepared in oil and carbolic acid, is passed through the skin, but to one side of the urachus, and passed out on the opposite side, and the ligature drawn through for six or eight inches; the needle is again returned through the last formed hole and passed around the urachus upon the opposite side and out the puncture first made by the needle. The ligature is then secured by a firm knot and the ends cut close. By this means the ligature is out of reach of the colt, the urachus is tied, but the skin is not strangulated below the ligature. If tied too tight the urachus becomes strangulated and sloughs from the ligature to the lumen within, and dribbling is re-established. The internal treatment that I have adopted consists of lime water with the syrup of hypophosphate of lime, soda, magnesia, &c.; by regulating the bowels and aiding digestion by the administration of pepsin, pancreatine, etc. I have never derived very marked benefits from local applications to the joints. Now if any of your readers have more successful methods of dealing with this disease, I should be greatly pleased to learn them through your columns, as it may be the means of saving many valuable animals.

Respectfully,

G. HESS, M.D., D.V.S.

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#### VETERINARIAN WANTED.

*American Veterinary College, New York City:*

GENTLEMEN.—We would be pleased to have you send us a few names of your best graduates of this year or last. We are in need of a first-class veterinarian, *sober* and strictly honest. We have a town of six thousand people fifteen miles from a veterinarian; a well improved country in the oil and gas fields, four railroads and canal. If he understands his business, we will *guarantee* him success. Let us know at once if not too much trouble.

Yours,

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Delphos, Ohio.

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# AMERICAN VETERINARY REVIEW,

SEPTEMBER, 1890.

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## EDITORIAL.

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“FOR ALMA MATER’S SAKE.”—Strenuous efforts made in behalf of the American Veterinary College building fund—Dr. Coates’ plan—it is the most practical—little time has passed since its inauguration and yet it gives encouraging prospects of success—nearly twenty thousand dollars already promised—shall outside contributions be sought?—would it not injure our *esprit de corps*?—let the enterprise remain in the hands of the alumni. UNITED STATES VETERINARY MEDICAL ASSOCIATION.—A few days longer before it is called to order—strong exertions made by all to ensure its success—our fears ill-founded—Dr. Hoskins’ answer to the open letter of Dr. Williams—a reply to it—everything is explained satisfactorily, and now “on to Chicago”—the last communication from Secretary Hoskins. SPECIAL NOTICE.—Dr. P. Paquin, one of our best contributors—his communications will receive proper attention in our next.

“FOR ALMA MATER’S SAKE.”—Under this heading we called the attention of our readers, in our last issue, to the strenuous efforts made by the officers of the American Veterinary College to raise sufficient funds for the erection of a new college building, and referred them especially to the plan last submitted by one of the alumni of the College, Dr. Coates. This is probably the most practical of any which has been submitted, and its business-like character forms a strong plea in favor of its adoption. Although only a very brief period has elapsed since any active steps were taken to collect the various loans which in their aggregate are to make up the amount needed, it gives us great gratification to be able to state that already the prospect of the entire success of the undertaking may be looked upon as having almost passed into a certainty. Only a few—a very few—persons have been

approached, and yet the presentation of the plan has already been responded to by subscriptions amounting to upwards of nineteen thousand dollars. Circulars have been mailed to the entire body of alumni, but from many of them answers have not yet reached Dr. Coates. There can be but little doubt remaining that the entire sum solicited will soon be secured from those to whom circulars have been addressed. The officers have been accustomed to depend upon the alumni, and their past acts have so warranted this confidence that it has given them a right still to exercise it. It can scarcely be supposed, therefore, that in this last and critical juncture, they will remain deaf to the call and jeopardize the chances of success, now so fair. A call for outside contributions might be an easy and judicious measure, and facilitate the collection of the balance of the thirty thousand dollars required, but, would not this expedient greatly detract from the credit of the profession for their past liberality, and seriously wound the *esprit de corps* which ought to be cultivated among the brethren? No, let the honor of the enterprise remain among ourselves, and be retained where it belongs, as the rightful due of the alumni to constitute a perpetual memorial of their faithfulness in "standing by their Alma Mater."

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—A few days longer and the annual meeting of the United States Veterinary Medical Association will be called to order in Chicago. The programme has been carefully prepared, papers have been promised which are likely to call for interesting discussions, a large delegation of veterinarians from the East is expected to leave New York on the Sunday previous, and, to crown all these efforts with success, our colleagues of the West are now using strenuous exertions to make this great gathering of veterinarians the most important that has ever taken place in this country. This meeting will have for result not only a great advance in the profession, but will mark in the history of the American veterinary profession a great date—the union of veterinarians from all parts of the land and the consolidation of the United States Veterinary Medical Association. There was in the organization of



such a grand meeting a great many difficulties to overcome, The committee of arrangements must certainly have had much to do, and, in the presence of their various projects, it cannot be surprising if some possible oversight seemed to have occurred and misunderstandings to have arisen. Hence the expression of our fears in a previous number of the REVIEW, and also those of our correspondent and friend, Dr. W. L. Williams, in his open letter of last July. But these have all been allayed. The correspondence of Dr. Hoskins and Dr. Williams, which we here publish, has arranged and explained all difficulties, and all fears that the most friendly and harmonious feelings will not prevail, have now vanished. Everything is now satisfactory, the trip is arranged, the programme definitely laid out, the trains are secured, and now "All aboard for Chicago," to meet on the third Tuesday of September in the large Lecture Hall of the Auditorium Building.

We give here the two latest letters from Dr. Hoskins and Dr. Williams relating to the subject, brought on by the open letter of the latter.

[REPLY TO OPEN LETTER].

*To Dr. W. L. Williams :*

DEAR SIR:—In reply to the open letter published in the July number of the REVIEW, permit me to make a few notes on the past history of the United States Veterinary Medical Association. It has always in the past confined its programme to members of its organization, and only by special request, given by a unanimous vote, allowed outside papers to be read at its meetings. I have personally attended these meetings since it honored me with an election, and I have yet to attend one which, to me, did not prove instructive, and I have yet to receive of one of its members a resignation on the grounds of failure to perform its duties. On my accession to the office of Secretary, a careful review of its work for the past twenty-five years, its records and lists of members, led me to feel that its greatest weakness was not in the ability and worth of its members, but in the one fact that the preponderance of its members was east of the Allegheny Mountains. Conferring with the higher officers of the Association, and with their approval, I commenced, over one year ago, to develop an interest in the Association among the Western members of the profession. In conjunction with our President, we carefully selected for resident State Secretaries the best that our list afforded. With these members as a working body, I suggested to them the advisability of working up sufficient interest to command our Association to again make the West a visit. After many months of persistent work, in the face of much opposition arising from reminiscences of the Cincinnati meeting, we brought sufficient influence to secure a meeting in Chicago for

September, and now, for the first time, is sounded the alarm that the meeting is to be a failure. Whence comes the signal? From within the Association's body? No; it comes from one outside of its number—from one who, but a few years since, had his name dropped for non-payment of initiation fee and dues. Should this, I ask, deter us from continuing the effort, lessening our zeal to exhibit to others the desire we have to fraternize with them, to mingle with them and make stronger the common ties that bind us together; make broader and grander the common work we are welded together to perform? And why are we thus criticised because we have adopted a plan to go West in a body, and, to make as good a showing as possible, have offered such inducements as we could secure to draw not only those who were favorable to a Western meeting of the Association, but also those who were against the project? The manner in which we reach Chicago should be a matter of very little importance to any Westerner. We are not going there for a national show. We are visiting Chicago with only the interest of the whole profession at heart. We have chosen it for the place of our annual meeting for 1890 to prove unfounded the insinuation that we do not want Western veterinarians; to dispose of the argument that we do not join them because the distance to our meetings is too great, and that we never hold any accessible to the majority of our members. We have taken every method known to us to inform the entire West of the project, and have asked that the matter be brought before all your State Associations, so that no one could again flaunt the excuse that the time and date of the meeting were unknown. We have lost no opportunity to avail ourselves of every offer made to make our programme instructive and highly entertaining, and no more lucid and valuable writers exist on this continent than are assured by the names of Profs. Liautard, Salmon and Huidekoper. No names of members from the West were debarred, nor have any requests from Western members of the Association been denied. Our programme is not closed yet, and any new papers from any source will be announced. Surely, it was not expected that we, an Association beyond the Allegheny Mountains, should seek the kindness and courtesies of the West and prove so discourteous as to ask them not only to receive and entertain us, but also to provide the programme on which our minds and thoughts would feed. We may be lazy, but we are too gentlemanly to do this.

Our programme is not made by drafting members, but it is by solicitation on the part of the sub-committee, together with the officers. In this way we have secured the names of those already announced, and past experience of one-day meetings proved them too short for the transaction of our business and the proper hearing and discussion of one paper. It was for this reason, more than any other, that no further exertions have been made to enlarge the programme, as the long-continued sessions in the past, from 9 A. M. to 6, 7 or 8 P. M., have proved very tiresome, and thus adjournments without discussion or consideration of papers and reports of the utmost importance. This accounts largely to-day for the imperfect records of our Association. To avoid this we had decided this year to utilize the first day in the transaction of routine business and hearing of committee reports, and in this direction have urged the various committees to make the most comprehensive reports possible, on the grounds of their being assured a full hearing and due consideration. This

would leave the entire second day to the reading of papers and their discussion, and a knowledge of the subjects of three of these papers has lessened our zeal in further extruding the efforts to enlarge the programme, because these papers will be fruitful of wide and interesting consideration and discussion. We yet await the announcement of the title of the fourth paper.

For the first time in the history of the Association we have altered the law established by twenty-five years' usage, that a name presented for membership should be laid over for consideration until the following meeting, thus affording proper time for the examination of the proposed member's credentials. This year, by special resolution of the *comitia minora*, we decided to hold open the list of applicants until September 1st, in order that the proposed members from the West would be enabled to become fully fledged members in time for active participation in the transactions of the Chicago meeting. For exhibiting a disposition of unusual kindness to Western veterinarians, always in the past denied to applicants in the East, we are again severely criticised.

In answer to your questions :

1st. Our Association's past record is the only answer we have to make in our dealings with graduates from regularly organized colleges; our list of members proves the worth of our record so far.

2d. The Chicago meeting is to be the twenty-seventh annual meeting of the United States Veterinary Medical Association.

3d. Our small list of members in the West, and their extreme modesty in not suggesting more than one of their number for a place on the programme, and our knowledge of the importance of the papers, so far offered for consideration at this meeting.

4th. The most cordial welcome it is within our power to extend to you; as to the unanimous election, I cannot vouch for that. It requires only a two-thirds vote for election, and this accomplished, you will be accorded at this meeting the fullest privileges of membership that we can confer.

5th. No; we shall stand ready to make you further concessions as such may arise or be asked for, in the same spirit of kindness and fraternal bonds as those already conceded you.

We ask at your hands in Chicago, as has been conceded us in Boston, New York, Brooklyn, Philadelphia and Baltimore, a generous welcome, a strengthening of the fraternal relations and common purpose that draws us together, and a thorough amalgamation with us in all your strength of numbers, zeal of work and common interest in the noble structure given to our hands and minds to mould into a grand and completed work.

Very truly yours,

W. HORACE HOSKINS, *Secretary.*

*Chairman of Sub-Committee of Arrangements.*

[ANSWER TO THE ABOVE].

W. H. Hoskins, D. V. S., *Secretary and Chairman Sub-Committee of Arrangements.*

DEAR SIR.—Your letter in the August *Journal* in reply to mine in the July *REVIEW*, contains more in quantity and quality of fraternal feeling of Eastern

toward Western veterinarians than had previously gained publicity through the press. The West desired such declaration of fraternity, and it was largely exploratory, for the purpose of discovering if such feeling existed in the East, that my first letter was written. Hence its main object has been realized in a very satisfactory manner.

Incorporated in your letter, however, are some statements which deserve comment.

At the outset, in saying: "It [the United States Veterinary Medical Association] has always in the past confined its programme to members of its organization, and only by special request, given by unanimous vote, allowed outside papers to be read at its meetings," you would apparently have the readers of the *Journal* infer that my open letter was the result of wounded vanity at not being accorded a place on your programme. As this subject was not broached in my letter, it would appear incompetent in your reply, and since I have at no time and in no manner asked or desired the honor, nor authorized any friend to speak for me in the matter, it would appear that you were laboring under a misapprehension. But were the suggestions as to my motive well placed, your statements as to usage seem at variance with the records of your society, since in your own city, Philadelphia, at your meeting of September 20th, 1886, a paper was read by an eminent gentleman who was not only not a member, but if your title V. S. means anything, he was not even *eligible* to membership and was not on your honorary roll. It is abundantly safe to say that he was *invited*, not *suffered* to read his paper after reverently begging the favor.

You grow phenomenally and unnecessarily eloquent over the fact that the published criticism came not from a member, but from one "who but a few years since had his name dropped for non-payment of initiation fee and dues." You failed to add the very material fact, that I did not apply for membership, as I was aware that all your meetings were held one thousand miles distant, out of financial reach of a young, struggling Western veterinarian, and it was for the purpose of breaking down this barrier between you and the mass of Western veterinarians that we urged you to hold a Western meeting. I can scarcely believe that your society makes a practice of electing veterinarians to membership without their having applied, and then pays you a salary as its authorized mouth-piece to belittle those who find it impracticable to accept the proffered honor.

To your claim that "No names of members from the West have been debarred [from programme] nor have any requests from Western members of the Association been denied," we would say that Western veterinarians, whether members or not, are not likely to beg for a place, nor is it plain why you should expect them to do so, when by your own admission and records, you procure Eastern papers from members and non-members by the active solicitation of your committee, while among the one thousand Western veterinarians you solicited no papers, with one exception, until after my open letter, and accorded them very scant attention, not even deigning to answer an urgent business letter from your fellow-officer, State Secretary Butler, who, galled and disheartened by your silence, was finally driven to withdraw his paper, partially promised to your President.

It has become quite evident that the unpleasant tangle in which we are involved is due in the main, if not wholly, to a very natural error; you broke away

from a time honored precedent to hold a meeting in the West, of an Association which by holding its meetings in the East, has remained essentially Eastern, and after deviating from that precedent as to location, you overlooked the advisability of departing from custom in other matters as well, thus threatening the desired harmony between programme and place.

Whatever may be said of its drawbacks, public agitation of the subject has brought forth such frank and candid expressions of fraternal feeling toward Western veterinarians that it is very evident that your actions and utterances of an earlier date failed to faithfully express the prevailing sentiments of the body of your society or of your own personal feelings, after more careful reflection and observation under the new conditions and from the new point of view, brought about by change of location.

It now remains only for Western veterinarians to attend the Chicago meeting as largely as possible; to enter fully and heartily into the enjoyment of your very excellent programme, the worth of which is fully assured by the names of Drs. Salmon, Huidekoper and Liautard; to mingle cautiously and courteously in the business and social life of the society, and above all to demonstrate beyond doubt our hearty fraternal feeling toward Eastern veterinarians, becoming thoroughly amalgamated with them in a truly grand national organization, and extending to them so cordial a welcome, that not only will they rejoice for having come among us, but will look gladly forward to an early return to the West.

The meeting will prove one of unusual importance to the profession at large, offering as it does by far the best opportunity in its history for the United States Veterinary Medical Association to become, in the highest sense, the representative national veterinary society of the United States, and to this end all veterinarians from every section, who can possibly do so, should attend the meeting, and laying wholly aside all sectional or personal feeling, unite in one whole, with no East, West, North or South, and with but one object in view—the elevation of the profession.

With the sincere wish that the Chicago meeting may prove of very great value to the society and profession, and heartily assuring you that what has been said and done, however erratic or misguided, has been inspired only by a desire for that justice and respect of which we are now assured, to the large section of the profession of which I am a member,

I remain yours truly,

W. L. WILLIAMS.

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The Committee of Arrangements of the United States Veterinary Medical Association takes this opportunity of extending a cordial invitation to every graduate of veterinary science in good standing in the United States to attend the Annual Meeting, in the Recital Hall of the Auditorium Building in Chicago, September 16th and 17th, 1890.

The special train from the East, leaving New York City about 8 A.M. on the morning of September 14th, offers great inducements in lower rates for a pleasant way of journeying to the convention.

It is expected that one and one-third rates will be granted on all lines in the middle district (between the Alleghany and Rocky Mountains) converging in

Chicago, to all those who attend this meeting. These rates may be obtained by application to the Secretary.

The committee beg to announce that the title of a paper to be read by Prof. Liautard of New York is on "Veterinary Jurisprudence."

The address of welcome on behalf of the western members of the profession, will be delivered by Dr. W. L. Williams, V.S., President of the Illinois State Veterinary Medical Association, and responded to by the President of the Association, Dr. Charles B. Michener, of New York.

The meeting will close with a banquet on the evening of the 17th. The programme of the meeting will be ready for delivery on September 1st, and will contain all the details and necessary information, and will be sent to all who apply to the Secretary,

W. HORACE HOSKINS,  
12 South 37th St., Philadelphia.

SPECIAL NOTICE.—Amongst our most ardent collaborators we must mention the name of Dr. Paul Paquin. The doctor has recently favored us with two fresh communications, the result of his investigations on Texas fever and anthrax. An unusual amount of material received for this publication has so far prevented our doing justice to these excellent papers, but in presenting him this apology for our delay in printing them, we can assure him that we will do justice to him in one of our early issues.

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## ORIGINAL ARTICLES.

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### RABIES AND STRONGYLUS TETRACANTHUS, AS A COINCIDENCE IN THE HORSE.

By G. W. BUTLER, V. S., Circleville, Ohio.

A Paper read before the Ohio Veterinary Medical Association.

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It is my intention to bring before the members of our Association who are present to-day, a report of a few interesting cases that have come under my observation during the last few months.

CASE 6.—On the evening of Feb. 12th, 1890, I was called to see a trotting bred filly two years and nine months old, owned by John W. Brown and Son, of Yellowbud, Ohio. The history of the case as obtained from the attendant is as follows: Nothing unusual had been noticed with the animal until the morning of the day I was called, when it did not eat its food

after being taken from the yard where it had been the previous night and put into the stable. It stood stretched out in the stall with its head hanging low and trembling violently, especially behind. There was a spasmodic contraction of the muscles and the animal soon began to show symptoms of brain affection by placing its head against the manger and sides of the stall and pushing with great force. Trembling and spasms increased in severity until the animal was no longer able to retain the standing posture, when it fell down.

When I arrived I found the following symptoms exhibited: Lying quietly and flat upon its side; respiration heavy and stertorous; pulse imperceptible; heart-beat seventy-four per minute; passing urine involuntarily; limbs rigid and stiff and jaws locked.

*Diagnosis.*—Some affection of the brain; probably a tumor or blood extravasation from a blow of some kind.

*Prognosis.*—Death, which took place two hours later.

*Post Mortem* next morning.—Body well nourished, small intestines filled with bloody looking serum and the mucous membrane greatly inflamed; cæcum and large colon contained considerable fæcal matter, were greatly distended with gas, and the mucous membrane, which appeared congested and thickened, presented numerous red or dark colored spots, each of which contained one or two small round parasites (*strongylus tetracanthus*). Other organs were healthy.

I failed to find any lesion of the brain and I acknowledge my disappointment, for the symptoms presented certainly indicated an affection of that organ. I sent a few of the worms to Prof. Duncan of Toronto, Canada, who pronounced them as belonging to that form of nematode parasite above mentioned.

CASE 2.—A horse belonging to W. Leist of Circleville, Ohio, became sick Feb. 24th, 1890. He was a gelding, in fair condition, and nearly four years old. The first symptoms noticed were spasmodic cramps, which seemed to be confined to the abdomen and were not unlike common spasmodic colic, although the animal appeared more nervous and excitable than in an ordinary case of colic. I was called on the 25th, in the

forenoon, when the horse exhibited the following symptoms: Pulse 52 per minute, temperature  $101\frac{1}{2}^{\circ}$  F., pupils dilated, visible mucous membranes congested, abdomen gaunt; would strain often and violently and at each time eject a little dark colored urine; passed a small quantity of fæces quite often; examination per rectum revealed the bladder empty and contracted so that it felt like a small hard ball between the fingers. The horse would snap and bite at hens that happened to come near him, and any noise apparently induced a considerable degree of excitement, when the breathing would become hurried and parts of the body wet with perspiration. If one chanced to cough or spit near the horse, he would strike out with the fore foot; the manner in which the act was performed, however, indicated that there was no desire on the animal's part to injure the offender, as the foot was raised and lowered in a moment of excitement and the blow did not seem to be directed at any particular object. At times abdominal pains seemed severe in the extreme, and when we attempted to administer a drench, contraction of the muscular system was so great that the horse could not stand, and fell down. These spasms were clonic in nature, for as soon as the horse was left alone he would become comparatively quiet and partake of food and water but seemed to have some difficulty in swallowing. The period of quietude between paroxysms varied as the disease advanced, becoming shorter all the time, and the spasms also grew more severe as death approached. The horse became very excitable before death and died a few hours after I first saw him.

*Autopsy* next morning.—Abdomen greatly distended with gas; stomach in addition to a quantity of food, contained quite a number of bots, but otherwise looked healthy; small intestines inflamed in places; mucous membrane of large colon and cæcum contained a great number of small worms (*strongylus tetracanthus*) and was thickened and inflamed. Thousands of small worms, nearly white and from one quarter to one inch in length, were free in a portion of the large colon.

The mucous membrane of the larynx, pharynx and trachea



was inflamed and the lungs were congested. As I had attempted to administer a dose of chloral in a pill which broke in the mouth, and as there was difficulty in swallowing, I thought at the time that the inflammation of the throat was probably due to the chloral.

CASE 3.—A mare, two years and ten months old, rather small, owned by the same man who owned case 2, and kept on the same farm, was noticed unwell March 9th, but had been slightly troubled with a cough for some time and had discharged a little from the nose. I saw her March 11th when I found pulse 44 per minute and full; temperature  $103\frac{2}{5}^{\circ}$  F; very nervous by times, would have cramps every few minutes; eyes bright and full; pupils widely dilated. In fact, she appeared as though very much frightened. The mucous membranes were injected and there was great trembling; could not administer a drench on account of spasms; abdomen very gaunt; would eat during intervals between spasms; passed a little urine and fæces often, and there was considerable tenesmus. During paroxysms the respiration was very much accelerated and the animal perspired at times; would make frequent attempts to lie down before doing so and would only lie a few minutes when she would rise with great difficulty on account of muscular contraction.

March 12th. Pulse 64, irregular and varied according to periods of quietude and excitement. The inclination to bite one of her fore legs was so great that it was necessary to muzzle her; spasms became more aggravated and came on oftener; died towards evening and before death was unable to rise to her feet.

*Autopsy*, March 13th at 2 P. M.—Abdomen distended with gas to such an extent that when the skin was cut the pressure from within was sufficient to tear the muscles; there was also an effusion of gas into the cellular tissue under the skin of the neck. The intestines and stomach contained some solid matter and were inflamed in places; a great number of parasites (*strongylus tetracanthus*) were found in the mucous membrane of large colon, cæcum and a few in floating colon. Those in floating colon were more scattered and the spots on

the mucous membrane, where the worms were found, were much larger, being about the size of a pea and red in color. A great many small worms were found free in a portion of the large colon, similar to case 2. The liver presented a number of light colored spots and its parenchyma was soft, being easily broken down; numerous ecchymosed spots were scattered along the intestinal tract. There were a number of black spots on peritoneal coat of small intestines which resembled ink stains and the mucous membrane immediately beneath these spots presented pit-like depressions, but there were no ulcers. The lymphatic glands along colon that contained parasites were enlarged, lungs were congested, mucous membrane of larynx, pharynx and trachea inflamed and brain congested.

*Remarks.*—In case 1 the symptoms were such as to impress one with the expectation of finding some brain lesion, but, as stated above, the post mortem revealed nothing unnatural in that organ. I cannot account for the symptoms of brain affection, as I think it scarcely probable that they were due to the irritation set up in the intestines by worms, and I think it equally improbable that an abnormality of the brain, such as a tumor or blood extravasation, would escape my notice in making a pretty careful examination. Judging from the amount of intestinal inflammation in case 1, I would think there must have been symptoms of abdominal pain exhibited in the early stage of the attack; and this may have been the case in the night, when the animal was not under observation.

Cases 2 and 3 certainly presented symptoms of rabies, and my suspicion of the presence of that disease was at once aroused when I was first called to see case 2; yet a searching inquiry as to the manner in which the animal might have received the virus, elicited nothing to make the matter clear. No one knew of there having been a rabid dog in the neighborhood. This animal had during his illness a small sore on the upper lip, but how he came by it or what caused it no one knew. As I was the first to notice it and as the horse had been sick some time before I saw him, I thought it quite probable at the time that it was caused by striking the head

against something during one of the paroxysms of the disease, therefore I did not attach much weight to it. After holding a post mortem and finding so many parasites and a good deal of inflammation produced by them, I rather attributed all the nervous excitement and muscular contraction to their presence. When I was called to case 3 and found the symptoms almost identical with case 2, my suspicion of rabies was again aroused; but after making an examination of the animal after death and finding so many worms again, and evidence of their injurious effect upon the intestines, I again nearly gave up the idea of rabies and thought the trouble due to the parasites. I have, however, recently obtained information that leads me to more fully conclude that cases 2 and 3 suffered from rabies. Upon the farm where these horses were, there were two dogs, one of which became sick a few days after the last horse died. The symptoms as described by the owner of the animals were: dropping of the lower jaw, a great desire to bite the ground, inability to control himself and in a short time he was unable to get up, when he was destroyed. The dog made no attempt at any time, however, to bite those around him. Judging from this description I have come to the conclusion that the dog had dumb rabies; and I have also come to the conclusion that in cases 2 and 3 there was rather a strange coincidence of rabies and strongylus tetracanthus.

Since these horses died I have seen four cases of dumb rabies in the dog in Circleville, and it has been reported that mad dogs were in the surrounding country. I have never seen a case of rabies in the horse beside these which I have related, but taking into consideration the symptoms as described by different authors whose works I have had access to, the cases above mentioned are certainly somewhat different from those usually met with, as they did not manifest any great inclination to bite any one, the variation from a natural secretion of saliva was not sufficient to constitute any great abnormality, as there was no marked frothing at the mouth, neither did they become so furious as I should expect animals to that were suffering from rabies.

It may be that lesions in the intestines caused by the para-

sites had a tendency to somewhat modify the symptoms of rabies and render the cases apparently more complicated. The most prominent symptom presented in these two cases of rabies was clonic spasms, which seemed to be particularly severe in the muscular tissue about the abdomen. Perhaps this can be accounted for by the great number of parasites found in the colon and cæcum.

Cobbold, in his work on "Entozoa of Man and Animals," gives quite a detailed account of the different outbreaks caused by these parasites in Great Britain, as reported by different veterinarians, and as studied by himself. He describes one case in which the symptoms somewhat resemble those manifested in the cases I have described. Williams, in his "Treatise," states that the animals which suffered from these parasites in an outbreak in 1874, were all rising two years old, and that older animals running with them remained well and free from the parasites. He also states that in his opinion, in conjunction with the ages of the affected animals, diarrhœa and emaciation may be considered as diagnostic symptoms. In the cases which I have described, diarrhœa was absent, the animals were in fair condition, and in case 3 the horse was nearly four years old.

The intestines in which parasites were found presented a nearly similar appearance to the description given by Cobbold and Williams. The mucous membrane presented a great number of small brown or reddish spots which contained the parasites. Some of these spots contained two worms, and others only one, and they were either coiled in a round ring or in the shape of the letter s. The mucous membrane was inflamed and thickened, and in it were a few pus deposits or small abscesses in which the pus was usually inspissated. Cases 2 and 3, as well as other animals on the farm, had derived their drinking water sometimes from a well, at other times from an outlet of tiles that were put in the ground to drain a low part of the farm.

After the death of the two animals I prescribed ol. terebinth, alternated with ferri sulph. and gentian, for other horses on the farm and all have done well. •

I did not attempt a study of the growth and development of these parasites, neither did I perform any experiments in the way of feeding them to other animals. In an interesting letter addressed to me not long since in reference to his experience with this parasite, Tait Butler, V.S., of Davenport, Iowa, says: I was called to see a trotting bred mare, four years old, that to me presented no other symptoms than those usually observed in those cases of indigestion or mal-assimilation so frequently met with in animals of that age. I prescribed quinine and strychnine with little other effect than to cause the expulsion along with the fæces of a large number of small red worms of from a quarter to three-quarters of an inch in length. I immediately began the use of turpentine along with the tonics, but owing to the advanced state of the case the animal died. Several others of the same herd of horses were diseased, but rapidly recovered under the treatment above indicated. The winter following the parasites again made their appearance, but with turpentine were again destroyed, never to appear again up to date. On the animal that died I held a post-mortem, and found the large intestines of a dark color, indicating a subacute inflammation of a very extensive nature. Instead of finding one or two black spots indicating the abode of one or more parasites, on a square inch of the mucous membrane I found twenty. In fact a careful estimate indicated that there were not less than seventy-five thousand of these parasites infesting the large intestines of this animal, and this, notwithstanding that the animal had passed in fæces during the two weeks preceding death an equally large number. In the intestines were found many of the larger white variety mentioned by Prof. Williams, varying in length from one to two inches. I first placed a number of the small red worms, of say from three-eighths to one-half an inch in length, in a temperature of twenty-eight degrees below zero and kept them there for three days, when they were carefully thawed out and kept for twenty-four hours in well water at a temperature of sixty degrees. During this twenty-four hours they increased at least one hundred per cent. in length, and lost much, if not all of their red color. Some of these

worms became at least an inch and a quarter long, and resembled in many respects the smaller white worms found in the intestines. The worms that were one and two inches long when taken from the intestines, grew to two and three inches long in water in which was mixed some of the manure.

While I did not succeed in growing a white worm of three inches in length from a red one of a quarter of an inch in length, I did, as above indicated, succeed in growing each specimen procured in such a manner as to lead me to think that probably the long white worm was only an advanced stage of the small red worm.

In the mucous membrane were numerous small abscesses, varying in size from a small pin head to half the size of a pea. In each of these was a well developed small red worm. Where these abscesses had appeared close together, they frequently coalesced, and in this which constituted the larger abscess there were generally found two or three somewhat larger pale red worms. Some of these large abscesses, however, only contained one worm, but in these cases it was generally from three-fourths to an inch in length and nearly white. I inferred from the above facts that the parasite escaped from the mucous membrane into the intestine only when it had produced this abscess and it had ruptured.

I made sections of several specimens, but in even the most minute specks which appeared on the surface of the mucous membrane I was able to find a completely formed worm, many of which were not more than one-twelfth of an inch in length. In no case was I able to find what might be construed into representing the ova of the parasite or the parasite in its embryo stage. I was not able to find the parasite in any other part of the horse than the intestines, and portions of the large colon when fed to a kitten and two pups, failed to produce the parasites in these animals, although they swallowed hundreds of them. The parasites always lost their bright red color when left to grow in water, and no degree of cold seemed sufficient to check their growth if they were kept in a temperature of not less than sixty degrees after being thawed out. I enclose a pencil drawing of a parasite as

it appeared in the mucous membrane. It is magnified about fifty diameters.

I may also state that these horses of which I speak were pastured on low land and received their drinking water from a well not more than three feet deep and situated in the lowest part of the field. The water was dipped up with a pail into a trough. The owner of the horses, who is a reliable man of perhaps more than ordinary intelligence, informed me that when they removed the mud from the bottom of the trough thousands of small red worms apparently identical with those passed by the horses were found in it.

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## THORACIC CHOKE.

By W. H. GRIBBLE, D.V.S., Washington Oourt House, Ohio.

A Paper read before the Ohio Veterinary Medical Association.

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*Mr. President and Fellow Workers :*

I shall not attempt, nor do I deem it necessary to apologize to you if this paper is not up to the average status of such work, but will simply say: that I received the request from the Secretary to prepare a subject for discussion, during my busiest season of the year, and the little time I have had for preparation simply produced this paper, which I hope will be sufficient to open discussion on a subject very interesting to me, and that thereby we might obtain mutual benefit. The subject of this paper is one of great importance, and of more than common occurrence; one, in which the death rate is exceedingly high, and which to me is the greatest bug-bear of my individual practice.

I do not know whether this be from an inability to cope with the trouble from lack of professional knowledge; or that, mine being a country practice, and the animals usually first treated empirically, too much time has generally passed before I am honored with the privilege of treating them; or lastly, whether my complaint be not the complaint of all my associates and fellow craftsmen; but what I do know is, that nearly every animal brought to me for treatment suffering

with this trouble—the trouble I most dread, viz., the thoracic or low-choke—dies.

Any obstruction lodged in the pharynx or œsophagus produces, (or is that which is known as) choking, and most writers treat the subject as one of almost childish simpleness, some even entirely ignoring it; leaving the student to suppose that the complaint is a rarity, and its treatment and cure easy and simple. In fact, Dr. Robert McClure, in his work on the American horse, written some time about 1870—he being then I believe, a professor in the Philadelphia Veterinary College and an author of some note on works pertaining to the horse, says on page 59, “Choking is very rare in the horse, and what few we have seen was due to a ball of aloes sticking in the throat;” and he also says, “the high choke is by far more dangerous than the low choke.” I know full well that many of those present, as well as myself, will differ with this professional gentleman, both as to the rarity of choking and the degree of danger to our equine patients, in the high or low variety. So, with this knowledge of your sympathy, we will give you my experience. But first let me ask you to bear in mind that while we treat the subject of choking as a general one, your especial attention is called to the kind commonly known as low choke; and secondly, that as the choking of cattle with soft feeds is extremely rare, and the treatment when the obstruction is more solid, simple and in the great majority of cases easy of removal, we will pass them by and confine our remarks entirely to the horse. It is useless, gentlemen, for me to give you the minute anatomy of those organs in which choking occurs, but I think a little description will aid your memory and so not be out of place.

The pharynx is the cavity at the back of the mouth, behind the soft palate and common to the air and digestive passages. The œsophagus is the tube that carries the food from the pharynx to the stomach. It is situated above the trachea until it reaches near about the middle of the neck, where it deviates towards the left, entering the thoracic cavity near to the inner side of the first left rib; it soon regains its position above the trachea, passing over the base of the heart, and be-



tween the two layers of the posterior mediastinum, through the diaphragm at the opening in its right pillar to the smaller curvature of the stomach. It is an easy dilatable tube, composed of mucous and muscular coats, the former adhering but slightly to the latter, over which it glides. The muscular coat becomes thicker and thicker as it nears the stomach, so much so, that at and near its connection with that organ it becomes so thick and rigid that it forms a tube so narrow as to be almost if not entirely filled with folds of the mucous layer. This anatomical conformation, coupled with the manner in which many horses gulp their feed, I think the principal cause of low choke ; again, horses with sharp-edged molars will gulp feed, when they would not if these teeth had proper attention, this manner of swallowing without sufficient chewing causing choking from lack of saliva to lubricate the passage of the feed down. More than ninety per cent. of all cases of choking coming under our observation have been due to feeding dry oats to old horses and to well known greedy feeders.

The feed often grabbed and gulped without a single effort at chewing, forms a bolus which passes down the more dilatable and less muscular part of the œsophagus, but is too large to pass through what we will call the constricted part, or if not at first too large, is too dry and stops from lack of gliding material, (the saliva) soon becoming enlarged by further additions of food. It now requires but a short time for an accumulation of moisture to start this food to swell, and also this food acting as a foreign body causes irritation and we have an enlargement of that part of the œsophagus, with a constriction above and below, resembling to some extent a bag tied at both ends. Many cases of supposed choking we have found due to a piece of stick, but oftener a cob lodged crosswise of the mouth between the last molars of upper jaw, and sometimes wedged so tightly as to require considerable strength to dislodge it.

The general symptoms of choking are given as flow of saliva, coughing, retching, throwing up the head with a peculiar squeal, partial sweats, etc., and these are given by

writers in such a matter-of-fact way that students suppose them infallible; and, in the majority of cases the trouble is readily distinguished, but that it is possible to be mistaken the following case will show:

*History.*—Bay mare, four years of age, greedy feeder; had been fed oats and corn fodder for dinner, and nothing wrong noticed. She was hitched to light buggy to come to town four miles distant, and when but a short distance from home owner noticed a discharge of saliva from mouth and nostrils, which increased as he progressed. She was brought to our stable, and on examination she presented the most plainly marked case of choking (that is, judging from the symptoms) we ever saw. I immediately drenched with oil, and was somewhat puzzled at there being no return of it, so we very carefully passed a half inch white rubber tube entirely down the œsophagus to the stomach, meeting with no obstruction whatever. All the time the symptoms increased in severity, saliva flowing from her in such enormous quantities that it formed a stream on the stable floor. The respirations became intensely painful, and the accompanying squeal was, I assure you, not pleasant to hear. The nasal membranes became as blue as we have often noticed in horses shortly before death. The owner, fully satisfied that the animal would die, had gone home, and symptoms of asphyxia being very apparent, in fact the animal fell twice as if gasping for breath. As she sprung to her feet I determined to perform tracheotomy, which I did in its simplest form by an incision two and one-half to three inches in length, a suture in each side of wound and tied on top of neck; immediately, as if by some magic power, as soon as opening was made, she took a long draught of air, began to breath easier, less saliva to flow, and in an hour and a half was comparatively easy. In twenty-eight hours we allowed the wound to come together, and in three days sent the animal home to be cared for by owner.

Now, my professional brethren, what and where was the trouble? Our theory is, that feeding on fodder she greedily bit at a stalk which pierced or in some way injured the pharynx or the soft palate; swelling followed, causing the

case as described; that the swelling was œdematous, and nature in time reducing it, the operation of tracheotomy finally saved her life.

CASE No. 2.—Brown horse, six years of age, had been fed oats and hay for dinner; had eaten the oats, but would eat nothing more. Temperature normal, also pulse and respiration, and the only thing noticed wrong was simply he would eat nothing; there was not a single symptom of choking. Not being able to find out anything, we thought of throat trouble and drenched with two pints of water, not any of which returned. We plainly told the owner we had no idea what was the trouble, still he left it in our care.

The animal lived three days, and not until about ten hours before he died did he show one symptom of choking, and then simply a flow of saliva which never aroused our suspicion of the real trouble, and only at post mortem was the true fact made known. We found that the animal had been fed on cut hay (cut about two inches long) which had lodged at pit of stomach, each individual piece of hay seeming to be in a different direction, the ends piercing the mucus membrane of the œsophagus. It was not packed one particle, but formed a perfect screen through which fluids could pass without difficulty, until the irritation had caused inflammation and swelling of the parts.

Gentlemen, I have given these two distinctly opposite cases, not to have you think them rare and exceptional ones, but to show you that the subject should be more carefully taught in our colleges, and that writers in speaking of choking and treating the subject with such childish simplicity, lead many to form an opinion in early practice that they could never be led astray in diagnosing a case of simple choking. As to this simplicity of diagnosis, the two cases recorded are worthy of your consideration, and as to the importance of the subject, allow me to state that in the last three years I have lost seventeen (17) patients with low choke, and they were treated in every conceivable manner. Two of these I might have saved had a true history been given. Both were said to be choked on oats, whereas at post mortem the obstruction

consisted in one of an unbroken egg, and the other a small paper sack of indigo. All of the others were choked on feed, thirteen with whole oats, one with ground corn and oats, and one with cut hay.

Our experience has shown that when the obstruction is retained in the pharynx, the flow of saliva, coughing and distress are plainly and quickly shown, and at the same time with the aid of a speculum its removal is comparatively easy; and again if lodged in what we call the neck portion of œsophagus, then together with the symptoms of choking, an enlargement can be seen and felt, and if its removal by oils, manipulation, etc., fail, we still have resort to the operation of œsophagotomy, a not very complicated or dangerous operation, one which we have performed three times in the past four years, and each time with perfect success, depending largely on strict adherence to the rules of antiseptic surgery.

But if the obstruction be still lower and we have our dreaded low choke, especially if it be close to mouth of stomach, where we must contend with the rigid muscular coat before spoken of, which makes it more difficult to treat, and consequently of more danger to our patient, than the symptoms nearly always are less intense, less severe, more misleading, and, in fact, may be so slight as to lead us entirely astray.

I would not have you think that I have lost all my choked patients, for such is not the fact, having treated many others which we diagnosed as low choke that recovered, using the pro bang on several without bad results. Our treatment has been in the past varied, adopting all means recommended by others, using drenches of different combinations, etc., but all with about the same average result, but at the present time we employ a method which I have never seen described or used by any one else.

Of course we first obtain if possible, a history of the case, and this, gentlemen, is of the utmost importance. When we have diagnosed our case, we at once, and in all cases, drench with a small quantity of raw linseed oil or melted lard. This is simply as a lubricant; then, if the obstruction be of a

solid nature and in reach, of course we withdraw it, and if it be in the cervical portion we try to work it upward; then if this fail or the obstruction is still lower, we at once and without hesitation pass a probang, using the instrument as carefully as possible, and the smaller the better consistent with the service required of it. Should the history, etc., have led us to diagnose choking with softer material, as corn, oats or any ground feed, we then adopt our plan before referred to, viz.: Pass a half inch rubber hose well oiled down the œsophagus directly on the obstruction, and attach to this hose our common injection pump. We use lukewarm water, pumping slowly and steadily, until our patient fights, struggles, retches and coughs, which coughing, with the flushing will, if the case be a recent one, or the food not yet impacted, in a majority of cases carry off part of it. This we continue; the more our patient coughs, etc., the more we flush, and in nearly all cases, if we once get the upper layers of the imprisoned mass to floating off, it is only a matter of time and patience until all is removed.

We do not have to withdraw our hose with the struggles of the animal, as its small size, together with dilatation of œsophagus with pressure of water, allows the passage upward of the water, so forming what we might term a circulation. Sometimes the cough will throw the hose out. This plan is the one we now rely on, the one which has given us the most success, and which we submit to you for consideration. Thanking you for your kind attention, I close this paper, only asking a full and free discussion of its subject matter.

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## A FEW PRACTICAL HINTS.

By S. R. HOWARD, V.S., Hillsboro, Ohio.

A Paper read before the Ohio Veterinary Medical Association.

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I am not connected in any way with any biological laboratory; I am not an experimenter in this germ business; in fact I never saw many of these microbes we hear so much about, and worst of all, I don't even own a microscope; still,

I am presumptuous enough to cast my mite into the "common treasury of veterinary science."

The bacillus business is fully appreciated by us all, but don't some of you think that *some* of our journals need more practical articles if they intend to reach the needs of the mass of the profession? Let us have more cases reported and operations particularized.

To get along practically is what worries more than one young man fresh from college, and to many of them the getting of the equivalent for services rendered is most important. Our business is an honorable calling, and we must look to it for a support to ourselves and those dependent upon us. How to manage people as well as disease, is as necessary to know as anything else. A few suggestions of this kind I trust will not be out of place, and I hope will be of some benefit to some of us.

Some of the succeeding ideas are my own, and many of them are from "The Physician Himself," D. W. Cathell, Baltimore, Maryland, who has kindly allowed me the privilege of quoting from it at will. If my article shall prove of any advantage to my profession, it will have accomplished its mission.

Sometimes large farmers, for their own satisfaction, charity, or from a feeling of insecurity—lest some animal which has been sick has a contagious disease—will have you visit their servants' or poor relations' animals, and then escape payment of your bill on one pretext or another. You may obviate this result by going as soon as possible to the "boss," and after explaining the labor and responsibility of the case, make known your fears of not being recompensed unless they see to it, and then ask to place the account on your books in his name. But remember, even Jay Gould could not be held legally responsible for your fee unless he would distinctly promise and agree to be responsible.

When asked by customers how much the bills are, answer promptly "one dollar" or "ten dollars," or whatever it is. If you add any more words, it may weaken your claim and furnish them with a pretext to contend for a reduction. The

chances are, in the embarrassment of the moment, they will pay you without a word. If they do "kick," show your amazement at their doing so, and explain the justice of the charge. Might say, "My dear sir, I feel very sorry you think yourself imposed upon, and I very much wish you had inquired my terms in the start," etc. Do not be taken unawares by some one suddenly asking what their bill is, and through your embarrassment name entirely too low a figure, thus doing yourself a provoking injustice. Take your fees whenever tendered, even on Sunday. Never say, "Oh, any time will do," etc.; you will find it expensive modesty. Get cash from strangers, and tell them that is your rule. A good way to introduce the cash question, is to ask right in the start, "Well, is this to be a cash case or an account?"

We should always, unless poverty forbids, demand and secure a fair and honorable recompense for our services. Business is business, and we should let no false delicacy or politeness interfere with our business rules. No one in fact earns his means of living more fairly and often more dearly than a veterinary surgeon. We must live by our avocation as others live by theirs, and upon system depends both our professional and financial success. No man is at his best when saddled by poverty; when his mind is depressed and distracted, health lowered and temper vexed by the debts he owes, annoyed and dunned at every corner, and his discontented stomach uncertain where the next meal is to come from. These, and other cares that poverty entails, dwarf a man's mind and body and cripple his work. Popularity and humanitarianism will not lift us above the necessity of paying rent, buying horse feed, or the demands of the bookseller, or the instrument maker, or the butcher or baker. The nearer we get to the cash system, the better for all concerned.

We should present our bills when they are small and our services vividly remembered; also, for another reason, if we are neglectful or shamefaced and do not send our bills promptly, it will create a belief that we are not dependent upon our practice for a living, have no wants and do not need money, or that we do not hold this or that person to our

business rule, or are not uneasy about what he owes us. If we foster such notions, a bad system will grow up around us and great, irreparable loss will ensue. Asking for payment reminds them that there is a little of the human left about us, even if we are veterinary surgeons, and that we and our families have to live, and we must have our fees to enable us to do so. A good motto for a billhead is, "All bills *collected* at the end of every six months," also "Prompt payment fully appreciated."

A poor man may be forced into the position of a dishonest one, by you allowing his bills to accumulate until he cannot pay them. The very best time to talk business and have an understanding about your fees is at the first visit. If called to attend an animal surrounded by a crowd, always enquire who the owner is and who has charge of the animal, and then ask him if *he* sent for you. Again, sometimes grooms or drivers will send for you. Go, but send them to the proprietors immediately, or go yourself as soon as convenient, or let them know the nature of your attendance and come to a definite understanding. Some will drop you to escape paying an old bill, and then employ someone else and lie on you to cover up their obligation to you.

When you send a bill enter on your ledger the date of sending it, thus 1-8-'90. If a bill is just, stick to it and do not allow yourself to be brow-beaten into the position that it is not. Explain the difference between an ordinary visit and surgical attendance. Never undercharge for your services with a view of obtaining business, or in any other odious sense, for you will find men that only have two or four horses will employ you more than some that own fifty. Small fees are set off against small skill—in public opinion.

There is a great difference in under-bidding in our profession and that of ordinary commerce. We have no goods to manufacture or sell, and where one veterinary surgeon is determined to triumph, and the other resolved to prevail, they can keep up the storm of rivalry and efforts to crush or banish each other for years; give their skill to everybody for insignificant or nominal fees, impoverish one another and almost starve those depending on them for support.



Sometimes to get any pay at all, you will have to receipt your bills for a reduced amount. Make out the bill for the standard sum, that they may know your rates, and that you are not reducing your charges, *but taking something off the bill*. I think we ought to charge more for the first visit than for succeeding ones. It is usually an extra ordinary one, and therefore, justifies a double charge. Some will hum and haw about the size of their bill, and at the same time, if your charges were insignificant they would not employ you. Every one wants first-class services, but as cheaply as possible.

Some will call, consult you, obtain medicine and pay for it. Then if asked to call again to tell you how their horse or cow is getting along, will on returning show by every word and action that they do not expect to pay for advice, etc. Listen to them, and *then advise them to consult you again* whenever you see proper to designate. They ought to understand that.

When a new customer, instead of paying your fee, postpones it, ask his name and address in full and book it before him. The chances are you will get paid soon. "No cure, no pay," is a poor plan and it will often swindle you. Tell them you charge for services and not for results, and that you must be paid even though the patient is incurable or dies. They who employ you must take the probabilities of recovery from your well intended endeavors. Tell some if they pay as they go, it will encourage you and stimulate you to do your best.

After examining certain cases, you may broach the currency question thus: "Well, I see what your case is, and am willing to take charge of it and give you my best services, *if my terms will suit you.*" Or, "Ah! I am afraid I would charge you more than you would be willing to pay." This compels them to ask your terms, and puts them in a frame of mind favorable to your purpose.

Mark each bill sent to a customer, third, fourth or fifth as the case may be. An effective wording to certain slow customers, is to send their bill a short time prior to your having special need for money, and tell them you have very special need for it at the time you may mention. Another way is to

send the bill, or call and tell them you need the money right away. Even if they don't pay you then, they will when they call again. Do not itemize an account unless requested to, but put all down on your books. Some charge for going to a case of death, others do not. Even-handed justice is the basis of all lasting reputation.

Do not without a certain amount of reserve, remove warts, encysted shot or perform other minor operations for friendship's sake. How you would condemn yourself if your friend or his animal would contract a malignant growth, tetanus, etc. I know of a case where a harmless looking growth was removed by a surgeon from a friend's horse, which shortly died of tetanus. Another, an acquaintance of mine, a veterinary surgeon, inserted a seton for spavin which caused the chronic condition known as elephantiasis. In both these cases the services had been volunteered, and no remuneration expected. Some will be quite affable during your attendance, and quite different when you present your bill. If they pay you part of it, do not give them a receipt, but credit them with the amount on the bill before them.

The life of a veterinarian is not always a happy one. He must endure all temperatures, trudge at noon or midnight, face contagion and inhale noxious vapors, encounter the filthiest kind of filth and the worst of stinks, and perform many distasteful and disagreeable and disgusting duties. He deserves far better treatment and a much more comfortable support than he receives.

After a lifetime of toil as a veterinarian, how few have accumulated a competence! I can count all I know in this country upon my fingers, and they tell me it is the dollars saved in the first years of practice that roll up into sufficiency. Let us be honest, true and just in our minds and be governed accordingly, if we never get rich. Don't be in a hurry to locate any place—many mistakes are made this way. An office in a livery stable is desired by some, but by all means have a private room for your pharmacy and consultations.

Be sociable, but don't talk too much, and do not hand-shake and harmonize and associate unreservedly with the coarse,

ignorant and unappreciative. Never have companionship with irregulars. Do not associate with them in certain cases, or lend them instruments, for you will find in time such a connection unnatural and that you have contracted an alliance that will do you harm. "Protect us from our friends." Beware of the hospitality of certain friends who will importune you to drink with them. There is nothing in it in the long run.

Be very careful who you advise to study veterinary surgery, for brains and common sense are rare gifts from heaven.

A man is judged by the company he keeps, therefore your office should not be a smoking room for jockeys, dog-fanciers etc. The public has an eye like a microscope. (How well some of us know this)!

Study the art of questioning about your patients. A low tone of voice is preferable to most people.

Never fail to send your bill promptly to a dissatisfied person, even if you never expect to get it. Charge the maximum fee in all such cases.

Pay as you go, and if you can't pay much don't go far.

Ask for a patient to be brought out of his stall or unhitched. Do not go in alongside of *every* horse you are called to examine, for you will find it at times highly dangerous. Ask for a strap, bran, a stick or whatever you need, instead of plunging around after them yourself.

Often when a case is grave and you are being importuned to know whether you cannot do more, it is better casually to mention the things contra-indicated—bleeding, blistering, purgatives, sedatives, poultices, etc, and tell why, so as to let them know you are wide awake—but give them good reasons. Never guarantee a cure or certain success, or a certain recovery even from a bee sting. Guarantee nothing except that you know your duty and will do it.

Veterinary medicine is not a perfect science and life is not a definite quantity. When pressed by some one to say this or that is not dangerous, reply: "Of course there is danger, for even a pin-scratch may prove fatal." Tell him what you think, perhaps, will be the issue, and sometimes you might

add that you only assist nature and that you are not the Almighty, therefore you are not in the miracle business at the present writing. You might mention the possibilities and therefore gain a margin for uncertainties.

Although a young man I have found people that would swear by me one week and the next curse me for killing their cow, robbing them, etc. Melancholy experience will tell you, if you do not know it already, that the minds of men and women are subject to rapid changes. Links of friendship that have been forming for years will break in one day, and some will drop you with as little ceremony and regret as if they never knew you. I have treated several men's stock successfully and satisfactorily to both of us and then they would turn right around and employ a worthless and illiterate Negro to do their doctoring; then again they would come back to me.

When visiting a patient always let it be known whether you will visit again, and *when*. This will prevent uncertainty, and if you fear a relapse call occasionally, but always let them know *when* you will call again.

Some grooms and attendants will always lie and some will tell you the truth. Try and make your manner such that they will not hesitate to unlock themselves, for they can often tell you the whole secret of the trouble. To inspire complete confidence is half the battle of getting a practice.

In your rounds you will see and hear about certain deformities, blemishes and deficiencies of certain animals, and you will become a sort of repository of all kinds of secrets. Keep them with Masonic fidelity. It will gain you nothing to publish them.

Never solicit people by word or manner to employ you; for such a course will repel them and prevent you enjoying their esteem.

When you are unjustifiably dismissed from a case, especially if it is to make room for a bloated quack, do not consent tamely to be thrown aside in such a manner. Express your willingness to retire, but make known in a polite gentlemanly way, that you expect fair play and courteous treatment, and

that it reflects on you and injures you, and to this you cannot be indifferent. Thus you can express your disgust and gain you increased respect.

Never leave long intervals between the doses for patients having acute pain. Any opiate will relieve pain in an hour. Failure to do so necessitates another dose. Popular belief is that opiates are only to allay pain and do not cure sickness. "They lessen functional activity of the nerve cells of the brain and spinal cord, and even to some extent that of the respiratory and vase-motor centres in the medula, as evidenced by slower respiration, dilation of surface-vessels and lowering of arterial tension." (*Dun*) Lessening functional motion when indicated, is in my mind curing.

Omit nothing at first visit, and it is well at each visit—if you have plenty of time. Feel the pulse, take the temperature, inquire about the patient's laying down, drinking, noticing the surroundings, etc.; look to the feed, ventilation and surrounding manure heaps, pig-pens, cows in the same barn, etc., etc.

When in doubt as to a dangerous operation, remember the sin of omission is in appearance not so great as the sin of commission. You might say to the owner, that if you owned the animal you would operate, or you would not, as the chances appear to you. Consultation is a good thing. Having assistance not only divides the responsibility, but also constitutes one a teller of truth for the other and makes each the guardian of each other's character.

Remember that the public love to point out a botch or a failure. I set a horse's fore-leg that was fractured, and through medlesomness of the attending nurse it is crooked. As long as that horse is alive, it will be a lingering libel on veterinary surgery; no fault of mine, but I will receive the credit just the same. The methods proper to pursue in surgical cases are so well agreed upon by surgeons, and the results are so obvious, that even the vulgar and ignorant may criticise and prophesy. Having anatomy for a foundation, and a science for a guide, the surgeon is expected to follow certain definite rules, to have infallible foresight to overcome all surmountable difficulties and get a perfect result.

The sooner your account is settled with a dissatisfied person in one way or another, after your services are no longer required, the less liable you will be to have any trouble. Keep your surgical knowledge at your finger ends. Bandages too tightly applied are a great source of danger. I was called to a neighboring village with my swing. Horse ran away three or four days before; had perforatus and perforans tendons in one hind leg completely severed, and the other limb terribly lacerated from kicking; had been down ever since; meanwhile treated by a blacksmith. I found legs bandaged extremely tight and swollen tense, and great constitutional fever with extreme nervousness. Placed him in slings, and put a high-heeled bar shoe on one foot, dressing the wounds antiseptically with bi-chloride solution, iodoform, tow and loose cotton roller. The condition of the parts would not admit of plaster bandages; I was able to telephone directions; owner called in a day or so. Great pieces of tissue were coming off; owner was disgusted and ordered death. Of course *I* received the blame, not the blacksmith.

Tact and nice discernment in establishing and maintaining a proper attitude toward grooms and other attendants on stock, is a valuable qualification that may be cultivated without compromising yourself in the least. Love of approbation is natural, and to give attendants credit on proper occasions for faithfulness, is not only gratifying to them, but makes firm friends of them and secures their co-operation, which at times is not to be sneezed at.

A young, struggling surgeon, fresh from college, among strangers and in a community where they are not used to the services of a qualified man, will hardly need to own a conveyance the first year. Your customers will generally take you out and bring you back. Such being the case, they will often unnecessarily delay your return, make excuse after excuse, and almost compel you to stay all night. Tell them plainly your time is money, but that you are perfectly willing to remain as long as they are pleased to detain you, but that you will have to charge accordingly. You will be surprised to see how they will then hustle around to get you back.

Listen patiently to all sensible propositions, and if harmless, you may not object for the moral effect if nothing more. To humor certain whims will often make you a dollar, and on the contrary, to oppose them will gain you an antagonist. To be a good listener is an excellent quality. I have in this way learned a great deal that is not laid down in our works. Some people will bore you every time they get a chance, to tell you about certain animals that had this or that, and how *they* treated them. By forbearance, you can make some of them friendly to you, others you will have to freeze out by chilling coldness in their reception. You will occasionally encounter troublesome and wisely presumptuous people, who will make meddlesome inquiries, examine and cross-question you, rudely thrust their opinions upon you, challenge you to controversy and presume to discuss your diagnosis and remedies with you. These same individuals will expose everything you tell them, and likely add something that you have not told them. Give such the cold shoulder, but recognize them. They will do you some good sometime, perhaps. "Answer not a fool according to his folly, lest he be wise in his own conceit." School yourself till you can prevent your thoughts, embarrassments and opinions showing in your countenance during anxiety and emergencies. Nothing under the sun will cause people to believe in and rely on you more readily and permanently than to see you believe in and rely on yourself. Be not arrogant and self-conceited, but study to hide your doubts, hesitations, uncertainties, self-distrusts and apprehensions.

"In no department of veterinary medicine is the practitioner so frequently placed under such great difficulties as when he is summoned on cases of accidents. Messages are either only half delivered, garbled or supplemented from the imagination, and as is proved on examination, the case offers no resemblance to the condition which reports have conveyed. The resources of medicine are thus materially interfered with, and success denied. The officiousness of bystanders also greatly retards the attempts to arrive at the truth, by their endeavors to demonstrate their acquaintance

with the state of affairs. It will, therefore, reflect credit upon the practitioner who can estimate this in silence at its proper value, and pursue an investigation uninterruptedly to the end.

He should endeavor to obtain all possible information in the least time, and material agents for such a purpose are his eyes and judgment. It is not wise to seek information from the person who happens to be nearest or prominent on the occasion. First ascertain under whose care the animal was at the time of the accident, and direct to him the necessary interrogatories. Let them be constructed in such order as to facilitate the diagnosis. Having obtained sufficient data upon which to act, let the directions be given with decision, and personally superintend as far as practicable, their being carried out. Efficient detail and arrangement being established, state the line of action to be observed until the next visit is made, and as far as possible select an attendant upon whom reliance can be placed. Such men are to be found even among officious grooms and bystanders, and with them kindness, firmness and directions calculated to educate them in the principles demanded at their hands, tell forcibly, and many difficulties may be overcome.

One of the greatest causes of failure with young practitioners is want of firmness in giving an opinion and directions; and an arrogant, austere or despotic mode is equally reprehensible. These should be strictly avoided. Ignorance and eagerness to know the worst frequently cause misinterpretation of facts and motives, and particularly sentences that are not the offspring of mature deliberation; therefore, resist the attempts to elicit a hasty opinion. Above all, never let an absolute conclusion escape the lips until conditions are accurately investigated and circumstances carefully weighed. These accomplished, do not fail to let those who have the right receive a plain statement, *divested of medical technicalities*, including all reasonable grounds for the entertainment of hope or fear. The benefit of this will be exceedingly apparent when the patient is a valuable animal and the case serious, and especially with owners who are men of education.



Lastly, and particularly, when states are critical, put in force every means by which good may be effected; do not withhold anything that is calculated to expedite matters toward a favorable issue on the score of trouble, but avoid everything that may tend to create bustle and confusion.—

*G. Armitage.*

When you wish to make a short visit, begin promptly to ask the necessary questions in orderly relation, and do not allow leisure to introduce foreign subjects, or to let the conversation become desultory, or in any way digress from the case until you have learned all that is necessary. Have neither eyes nor ears for anything but your patient. If the weather is spoken of, answer in regard to its influence upon the patient. At succeeding visit ask *to see* the medicine. Inspect and inquire if it has been given as directed, *before* you express your opinion as to the patient's progress. By neglect of this you may be caught ascribing benefits to that which has been thrown out or not given, and you will be the victim of a never-to-be-forgotten joke.

Especially avoid giving self-sufficient people therapeutical points that they can resort to and ignore the surgeon. If you do this they will soon imagine that they know as much about remedies as you do, or more of medical practice than all our profession combined, and begin amateur prescribing and neighborly doctoring. Confine your remedies to officinal medicines and I implore you do not add a particle to the burden of our already nostrum-ridden land. Resolve never to prescribe that which you do not know. One recommendation of "—Balsam," may sell one hundred bottles where it is not indicated and for which you get neither credit nor compensation. If you fear a prescription will be renewed against your wish, stop short while writing and remark "This will be a good remedy," or something similar, "but that *one bottle* must be all that is used."

On certain occasions any of us will feel slightly timid, but I believe if we keep up with the times and work hard such occasions will be rare. No material change in treatment should be made immediately after a consultation, for see

what it would entail upon the regular attendant's reputation!

Our profession is like all others, not as exact as we would like to see it. See how law, religion, mechanics and other professions differ! "A house divided against itself cannot stand." As T. Greaves has said: "I tell you what we want is not more estrangement but greater unity, more courtesy and more fair-mindedness among us. We have plenty of roots of bitterness among us already, and I implore every good and true man to do all in his power to stamp out this plague spot." If our opinions are widely different and published from the house-tops, people cannot help but think we are a sham and do not know what we are talking about.

"Together let us beat this ample field,  
Try what the open, what the covet yield."—(Pope).

When your opinion is asked in regard to some one or something existing on the credulity, gullibility and ignorance of the people, it is your duty to lift the veil without reserve. Do it! When one of those slick (?) individuals or an "old bore," or some country cross road hoss doctor, or some stingy inquisitive, wants to tell you about an animal having so and so, and proceeds to pump you, head him off. He will bore you for an hour and it will never do you five cents worth of good. Listen attentively for a few minutes, then inquire "Where is your horse? He will answer he is either in town, or at home in the country. In either case say: "In order to give you a definite opinion, it is necessary to make a personal examination." Then shortly supplement by saying that you would not charge any more at one time than another for the examination. He will then see he cannot get something for nothing and that you are on your guard. Do not agree to attend any complication that may arise from any operation you may perform, without remuneration. If you do you will sow a great deal of work and reap an abundance of contumely and bad credit. When an old stingy asks what is good for this or that, or what would you do in a case of so and so, just button-hole him and say, confidentially: "I will tell you on the quiet. Now you go home and put a dollar in your pocket and then go and consult a *good* veterinary surgeon." He won't take offense if you say it right and you will make a customer.

Some may ask: "What do you give in a certain disease?" Reply promptly, "Advice." Such answers sometimes work admirably. No one who is incompetent to examine a patient is competent to prescribe and you had better avoid all pharmacists whose presumption leads them to assume the role of veterinarian. I do not refer to emergencies where the druggist acts as a humanitarian. Avoid over-praising certain stallions for their characteristics, for some people will take your word and over-estimate them and rely on your judgment and afterwards curse your opinion. Avoid a pharmacist who will refill your prescriptions for other patients than those for whom they were intended; and I am sorry to say some druggists will do this very thing.

Never exhibit surprise at any possible event growing out of sickness or an operation. Even when death occurs unexpectedly, do not indicate you were ignorant of the possibility or were to blame. Be self-possessed and defend your course of treatment, if necessary. In case of sudden death do not assume an oracular air and express a positive opinion as to the cause, but show a determination neither to form nor deliver one until you have coolly and calmly collected the evidence, or preferably, held a post mortem. Never pronounce a limb as "only sprained," and order a linament, with the assurance it will be all right in a few days, until you are positive it is not fractured, etc. The continued pain and swelling may call in another veterinary surgeon, who will discover the truth to your mortification. I live some less than a hundred miles from a celebrated surgeon and I can't remember how many times I have been told by different people of a mistake of this kind he once made.

Choose your language deliberately and give only definite answers, until you see whether any graver affection is hidden behind the present symptoms, whether new symptoms will be developed and whether there will be a response to the remedies used.

Life is a different quantity in different animals of the same class. Some will have less than the average tenacity of life, while others will have more. Thus we will oftentimes be baffled

as to their endurance of certain diseases. Let us, therefore, make anatomy, physiology and pathology our crowning studies and let us avail ourselves of every therapeutical aid offered us. Let us treat each other kindly, for at the most we only live a few days and we have enough trouble, the natural outgrowth of our business, to trouble us, let alone stirring up strife and contentions. I only wish I had the language to express my feelings on this subject. I hope this article will be thoroughly dissected and inaccuracies and mistakes pointed out.

“For never yet hath one attained  
To such perfection, but that time and peace  
And use have brought addition to his knowledge,  
Or made correction or admonished him,  
That he was ignorant of much which  
He had thought he knew, or led him to reject  
What he had once esteemed of highest price.”

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## REPORTS OF CASES.

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### ‘STOMATITIS PUSTULOSA CONTAGIOSA’ IN A HORSE.

By W. J. TORRANCE, Cleveland, O.

About two months ago a neighboring horse dealer called my attention to what he called his trotting colt. He had consulted me some days before about the horse without showing him to me, and described small nodular swellings on different parts of the skin, but especially the face and fore extremities. He said that *distemper* had smouldered in the colt for two seasons, but never thoroughly developed itself. I recommended him to try a course of mineral alteratives and diuretics. In about a week he came to me again and said, “You had better look at that horse—those little pea-like lumps appear to have been broken and have a black scabby surface—the colt has a persistent cough, runs at the nose and froths at the mouth.”

I went to see the colt (a five-year-old) and found matters as he described them and, moreover, there was an induration, enlargement and tenderness of the sub-maxillary glands. Up-

on turning up the lips I found hundreds of prominent, small, hard, round, white or yellowish nodules, some of which were already suppurating and ulcerating. The upper and lower lips were equally affected, as were also the tongue, frœncum buccal mucous membrane and velum pendulum palati. The nasal mucous membrane was also studded with hundreds of similar nodules, equally prominent and circular in outline, but smaller and entirely isolated, and there was a thin greenish mucous discharge from both nostrils. Deglutition was impaired, some fluid returning by the nasal cavities.

The dealer said, "I am giving the colt the blood medicine you recommended, and also the oil of tar to relieve the cough." I diagnosed the disease as "contagious stomatitis," and considered that it was running its specific course unmolested. I advised isolation, but he said, "those other horses are only dinkies, Doc—I don't care about them, but want to get my trotter back to his training,"

The disease ran a definite course in about eighteen days, ending in complete recovery, but inside of another eighteen days every other animal in the barn (4) had become similarly affected.

I would not have thought of writing up these cases for the REVIEW, but the same week two more "boarders" were brought from a neighboring livery stable, and the moment I saw the first one at my door, I recognized the cutaneous eruptions, and upon turning up the animal's lips found a most sickening sight. It was the same disease in a more intense form. The nodules, ulcers and depressed cicatrices (pox) were present in greater numbers and in all their stages, and were more confluent, leaving large raw patches in the interdental spaces of both sides and in other parts of the mouth. The cheeks and tongue were equally affected, and the velum pendulum palati was also a distressing sight. Salivation, of course, was profuse, the cough annoying, and the animal could scarcely manage even to masticate and swallow grass. The owner had not been aware of the condition of the mouth before this, but said that the pea-like nodules in the skin preceded the salivation, nasal discharge, enlargement of the sub-

maxillary glands and cough by about a week. All of these animals, however, had had a touch of the influenza cough in the spring. In none of these cases was there more than a *slight* premonitory or concomitant elevation of temperature.

I directed the treatment of this case to the local lesions which were positively severe, giving oft-repeated gargles of a solution of tr. ferri. chlor. pot. chlor. and glycerine for about ten days, and then followed it with lig. arcenicalis and bitter tonics. Pits or depressions on the dentate surface of the gums, exactly like the "human small-pox pits," remained for a short period and completely disappeared, and all to whom I showed these cases said the horses smelled like "mice," but the symptoms upon the skin were positively dissimilar to those of "equina variola," and the nasal nodules and ulcers bore no resemblance to those of "glanders."

The limbs were not affected much below the knees or hocks, and the hind limbs were less affected than the fore. Some of the cutaneous swellings, however, became large and confluent with some œdema of the limbs, with a "collar" at its upper border, and with these conditions in the next case, there was a *bonafide*-like appearance of the nasal membranes which made me fear purpura as a complication, or as a primary affection in an obscure form, as I had once before seen it run a similar course.

The next and last case, which I shall briefly describe, was also put out of the same barn and adjacent stall as the one above described. It was a case where purpura and farcy positively threatened to appear at any moment, and every morning the horse was the picture of a "spotted leopard"—the sub-cutaneous lymphatics especially (from lips to hind feet) being delineated and spotted more perfectly than pen or paint can describe. By noon each day these conditions almost entirely disappeared, and after a couple of weeks every symptom of contagious stomatitis appeared and ran its definite and specific course, ending in complete recovery; but while the disease was hanging fire in this case, *i. e.*, prior to ulceration, farcy buds in the lymphatics would almost mature and suppurate, would rapidly disappear, to be suddenly replaced by the swellings, etc. of the purpura.

Treating this case with moderate doses of iron, arsenic and chlorate of potash proved worse than useless, so I changed the medication to four ounces each daily of Fowler's solution and nitrous ether and found that the slightest diminution of dose in any case would bring back the symptoms of purpura and farcy in all their gravity.

In three weeks this horse (a large six-year-old) received almost three quarts of lig. arsenicalis. How much of it will kill a horse?

The groom who had attended these two cases in the livery barn was affected with a venereal disease and washed his sores in the same bucket with which he watered the horses, thus adding another element of difficulty to the matter of diagnosis. But I have seen half a dozen more cases, and have had reported to me still more this summer of a similar affection, where diseased human attendants were known to be absent. As far as known, this affection is confined to four, five, six and seven-year olds in prime condition. I called the attention of the district veterinarian to some of these cases, and he coincided with the diagnosis, "stomatitis pustulosa contagiosa."

[To comply with the request of the author, we must respectfully say that a careful reading of the above article makes us consider all those as cases of equine variola—horse pox.—EDITOR].

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#### OBSTINATE CONSTIPATION.

BY WM. R. CLAUSSEN, V. S., Waupaca, Wis.

The subject of this report was a five-year-old bay gelding. Monday forenoon, July 14th, the horse was at work, appearing as well as ever, ate his meal at noon, but was shortly after noticed to be uneasy. He would now and then look around to his flank, raise one hind leg and touch his sheath with his nose; would paw a little, then lie down quietly for an hour or more at the time. This continued till Tuesday morning, when he would remain lying in the sternal position, unless made to rise. I was called in at this time. Temperature, respiration and pulse normal. On inquiry I was informed that Monday, just before noon, the horse had voided fœces,

normal in quantity and appearance, but nothing had passed since that. Examination per rectum proved this to be empty, while the colon was filled with alimentary matter. Diagnosis impaction. Eserine sulph. gr. i, followed in one half hour by pilocarpine muriate grs. ii, was administered and caused violent expulsive efforts, but no fœces followed. Injections thrown into the bowels would be expelled immediately, accompanied by more or less flatus. Gave aloes ʒ vi and left.

On Thursday, two small pellets, enveloped in mucous, came away. I now began to mistrust some serious obstruction and ordered flaxseed tea, to which was added a little fl. ext. hydrastis and cascara sagrada, to be given every four hours and to be supplemented by clysters.

Friday, condition about the same. Temperature normal, pulse 38.

Saturday. No change. Took a few mouthfuls of bran-mush.

Sunday. Lying quietly : no fœces.

Monday and Tuesday. No change. 1 pint linseed oil, to which was added gtt 15 croton oil. In afternoon one grain eserine sulph. Straining, no fœces.

Wednesday. Pulse rose to 60. No other change.

Thursday. Pulse 65. No fœces.

Thursday night. Uneasy. Broke out through the barn door and trotted around the yard. Slushing sound in the bowels; for the first time tympanitic; drank a quantity of water at the well; went back in the barn and died, apparently from asphyxia.

At the autopsy, the stomach, small intestines and the first two divisions of the great colon, were found to be nearly empty. The last two divisions were filled, and in the floating colon, about eight or ten inches from its origin was found a ball, weighing one and one half pound, completely blocking the passage. Behind this two small, hard pellets. On section the ball was found to consist of an outside layer, about one inch thick, inside of which was another small ball, the nucleus of which consisted of a gravel, the size of a small hazel nut. That part of the floating colon, between the ob-



struction and the origin of the organ, was highly inflamed and nearly denuded of its mucous coat. Otherwise the intestines looked well and there was but very little effusion into the peritoneal cavity.

During the time the horse was sick, intestinal murmurs could be heard, sometimes quite natural, at other times tinkling.

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### FRACTURE AND AMPUTATION OF THE LOWER JAW.

By DR. D. K. LIGHT, D.V.S., Palmyra, Pa.

I have mailed to you to-day a package containing the inferior extremity of inferior maxillary of a two-year-old dark bay filly, with the desire to have it deposited in your museum should you see fit to do so.

The colt when first seen by me presented extensive swelling of inferior portion of lower jaw which, upon examination, proved to be a fracture of the body of inferior maxillary with two small places where the bone had cut through the mucous membrane. An attempt was made to splint and bandage the part, but progressing very unfavorably, we suggested to the owner that the only proper available thing to do was either destruction of the colt or amputation. The latter being decided upon, we proceeded to amputate the part, leaving as much mucous membrane intact as could be possibly done. The wound was nicely dressed and I ordered the attendant to syringe the parts twice a day with a weak solution of nitric acid, and all solid food withheld for three or four weeks. The case progressing very favorably, nothing more was done except the removal of dead pieces of bone. As the healing progressed, the part completely covered with the mucous membrane presented a nice, smooth, and even extremity, no pendulousness or retraction of the lower lip following, as was anticipated in the beginning.

The accident occurred in July, 1886, during an attempt at breaking the colt with a war bridle, etc. The mare has had three colts since, and up to date is doing well; nothing abnormal can be detected by external observation, etc.

## IMPACTION OF OMASUM.

By S. C. ORR, V.S., Manhattan, Kansas.

On the evening of July 19th, I was called to the State Agricultural College Farm to see a valuable short horn cow, seven years old and weighing 1400 pounds. Upon examination I found symptoms of constipation, with probably slight impaction of the omasum, from eating the dry grass in the pasture, but did not consider the case a serious one. I gave epsom salts 2 pounds, pulv. Jam. ginger  $\frac{1}{2}$  ounce, nux. vom.  $1\frac{1}{2}$  drachms, in about 3 quarts of water, and ordered a little bran mash and plenty of drinking water. On the evening of the 20th I went back, to find no change. I then gave 1 pint raw oil (all I had with me) and 10 drops croton oil, and ordered walking exercise, with occasional injections per rectum for several hours. On the morning of the 21st, there still being no action from the medicine, we gave her  $1\frac{3}{4}$  pounds epsom salts, 10 drops croton oil and 1 pint of molasses mixed with warm water, and ordered 2 quarts linseed tea to be given as a drench, and warm water per rectum every hour, and walking exercise the last quarter of each hour through the day, and the same treatment every two hours through the night. On the morning of the 22d there still being no action from the medicine, we gave 2 pounds of epsom salt,  $\frac{1}{2}$  pound sodium chloride, 40 drops croton oil and  $1\frac{1}{2}$  pints molasses in warm water, and continued the drenches, injections per rectum and walking exercises alternated with kneading the stomach every two or three hours during the day-time, and resting at night. On the evening of the 24th there was a slight action of the bowels, and on the morning of the 25th a copious discharge. The cow now began to regain her appetite and complete recovery soon took place. During the treatment the cow was allowed all the water she would drink. She would eat a little bran occasionally and did not seem to suffer much pain.

## DOUBLE FECUNDATION.

By C. BRUDEN, D.V.S., New York.

On July 24th, 1890, at 6 A. M., a gentleman called at my house, requesting me to go at once to Harlem, and see a mare

which had had a colt and was in a critical condition. On my arrival, I found a sorrel mare in a large stall standing up, in a comfortable, though somewhat weak condition.

In a corner of the stall lay the colt, with placenta almost separated where the mare had foaled. I removed the placenta and found it was about a nine month foetus. Partly underneath lay another colt. I separated it from the placenta and found it a seven months colt, both in a well formed condition but dead. In the afternoon I met the owner in his stable downtown and was telling him what I found. He said, he did not know she was in foal; his man standing by remarked, "don't you remember, when she went to the farm the first of October the colt served her; then we tried her again the beginning of December to the old horse and she took him;" he said he saw her take both. The difference in the development of the colts clearly shows there were two conceptions. This mare was brought to the city in April, and had worked with her mate at hard work until this occurred. Thinking this an interesting case, I have forwarded it for publication.

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AMERICAN VETERINARY COLLEGE—HOSPITAL DEPARTMENT.  
LACERATED WOUND OF SCROTUM IN A STALLION—RAPID RECOVERY BY ANTISEPTIC TREATMENT.

By W. LABAW, D.V.S., House Surgeon.

This was a simple case, which, however, serves to illustrate the value of antiseptic applications in veterinary surgery.

The subject was a black stallion, one of a team of four-in-hands, belonging to the Barnum & Baily circus. He was kept, as all the horses in that establishment are, while the show is traveling, viz.: under a tent, and only separated from his companions by a flying bar. While this bar was about being adjusted, and the spike upon which it was to be secured was being driven into the ground, the stallion backed upon it, and in moving away tore his scrotum, almost entirely separating by a transverse and somewhat curved section, the external covering of the testicles. The wound extended the

entire width of the scrotum and passed forward to the front of the testicles, where it not only divided the cutaneous covering, but also the dartos. The wound bled quite freely, and had quite an ugly look. The animal, however, proved tractable and comparatively equal to the importance of the case, and submitted well to the emergency. The wound was immediately thoroughly washed, and the parts brought as well as possible into juxtaposition, and kept in place by ten points of suture, the whole surface being well syringed with a solution of bichloride of mercury, 1-2000 and a pad of absorbent cotton applied, covering the entire region, the whole being kept in place by a large suspensory. The temperature of the horse remained normal all along. The continuation of this treatment was followed by adhesions by first intention in the largest portion of the wound, and a slight swelling of the testicles, which was at first noticeable, soon disappeared. Some discharge, however, took place from the upper part of the inguinal region, where the animal had been considerably chafed, as well as in one small portion of the posterior edge of the lacerated scrotum, and with this exception, the animal was discharged after seventeen days treatment, a period within which a cure could certainly not have been accomplished but for the application and use of the antiseptic treatment right from the start.

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#### SPRAIN OF THE FLEXOR BRACHII—ULCERATION OF THE BICIPITAL GROOVE.

BY THE SAME.

The patient was a young gray gelding, recently bought. He had worked well since the present owner purchased him, but on the morning of the 21st of March he was found in his stall lame in the off fore leg, and showing a small swelling at the scapulo-humeral articulation. The lameness increasing, and the swelling of the leg as well, and extending downwards to the knee, I was called to see him. At this time the animal was evidently very lame and suffering much pain, bearing no weight on the affected leg and if urged to move, making ex-

tension forwards of the right extremity alone, and only with great difficulty and reluctance. The point of the shoulder was warm and swollen, yet not to a very great extent. The lesion was located in the bicipital groove, and the case was considered to be one of sprain of the flexor-brachii as it passes over the humeral surface. A simple treatment of rest, with warm fomentations was prescribed, and was followed for several days with considerable improvement. The swelling seemed to subside, the animal carried more weight upon his weak leg; the forward movement was effected with more freedom and the case presented quite a favorable appearance, until one morning, having been about a week under treatment, he was found to be very lame again, much more so indeed than before, refusing to put any weight on the leg or attempt to carry it forward. The shoulder remained about the same and the swelling of the leg had also the same appearance. A strong and severe blister was then applied, covering the entire front portion of the scapulo-humeral articulation. This was followed by good results so far as concerned the action of the blister but with little effect on the diseased leg, though after the first vesicant effects the animal seemed to be inclined to bear more weight on his leg, and possibly to carry it somewhat forward more easily. This slight improvement was only temporary. The former stiffness returned; all motion seemed to have ceased at the scapulo-humeral joint; when walking, he carried his off fore leg forward by a jump; the external scapular muscles became very much atrophied, and the parts seemed to be deformed by a large plastic exudation on the upper end of the humerus. The owner was then notified of the incurable condition of his horse and ordered his destruction. At the post mortem examination and after the preparation of the bones of the joint, the principal lesions were found to be located at the upper extremity of the humerus. The fibro-cartilage of the bicipital groove was entirely ulcerated, the spongy substance of the bone presenting itself rough and softened, and all around the groove, evidence of active periostitis existed, bony deposits extending all over and reaching the inferior extremity of the scapula, principally around the tuberosity of the coracoid process.

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REVUE INTERNATIONALE DE MEDECINE DOSIMETRIQUE VETERINAIRE. (Ch. Chateaud, Publisher, Paris.)

The therapeutic introduced some nineteen years ago by Professor Burggraere, under the name of "dosimetric medicine," has made great progress in Europe especially, and principally in France, and its adoption in veterinary practice counts, at the present time, numerous partisans, having amongst its supporters gentlemen of high standing in veterinary circles.

A new journal, the *International Review of Veterinary Dosimetric Medicine*, has now been issued, under the direction of the author of the new method, and we hereby offer our best wishes for its success, and tender our sincere welcome to the new journalistic candidate. If patience and perseverance can insure success, these qualities, and the energy exhibited by Dr. Burggraere will both deserve and secure this realization. But whether this be so or not, the labors and efforts of the learned professor are not likely ever to be forgotten, and one day or another will claim, and doubtless receive, the just appreciation that his work deserves. We are not sufficiently acquainted with the "dosimetric therapeutic" to speak very intelligently of its value, but at the same time we cannot but recognize the fact that the use of the alkaloids, which constitutes one of the principal features of the method, does in many instances supersede advantageously some of the numerous compounds which compose many of the prescriptions in ordinary use, and that, in many instances, we have been personally benefited in employing them.

Can it be that this is only a European manifestation of what has for so many years been known in the United States as the "Eclectic School of Medicine," the two principal points of whose doctrine and practice refer to the employment of vegetable alkaloids and the denunciation of mineral remedies?

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## SOCIETY MEETINGS.

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### NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The Semi-Annual Meeting of the New York State Veterinary Medical Society was held at the Vanderbilt House, Syracuse, New York, July 15th and 16th, 1890. A large number of qualified veterinary surgeons from all parts of the Empire State were in attendance, showing that the Society, although new in its organization, to be one of the most solid and enterprising of any veterinary society yet found in our United States.

President Morris called the meeting to order by a few well chosen words, outlining the veterinary profession, its abuses in the past, and its aim and wants in the future. Also defining the class of men who have taken it up as a profession. The roll was then called, showing nearly all of the organizers present. A recess was then taken for the Censors to investigate the qualifications of applicants for membership. After the investigation by the Censors, the following gentlemen were accepted and became members of the society :

John A. Bell, W. L. Baker, E. E. Bowen, James Carnrite, Chas. Cowie, A. Drinkwater, W. G. Dodds, O. B. French, G. P. Geffery, W. G. Hollingworth, Wilson Huff, N. P. Hinkley, B. Howes, A. L. Hunter, J. J. Hill, E. D. Hayden, M. J. Henderson, E. B. Ingalls, H. C. Klicker, Prof. James Law, D. Leary, W. E. Langford, Asa N. McQueen, G. H. Moulter, C. D. Morris, M. M. Poucher, R. E. Rowell, F. A. Rich, G. H. Roberts, B. K. Siltzer, Wm. Somerville, Jr., Robert Somerville, Harry Sutterby, J. K. Sutterby, Frank Sutterby, W. S. Stevenson, G. H. Summerfeldt, John Wende, James Whytock, F. E. Williams, J. D. Whyte.

Letters of regret and telegrams of congratulations were read by the Secretary from a number of prominent veterinary surgeons who were unable to be present at the meeting. One in particular from Prof. Liautard, regretting his inability to be present on account of poor health, but stating his pleasure in seeing the organization of a veterinary society for our better protection and the advancement of the veterinary science, and sending us his sincere good wishes in our enterprise. The President then asked Prof. Law, of Ithaca, to make a few remarks.

Prof. Law then spoke briefly on the veterinary science, and the want of better veterinary legislation, and of better sanitary, police and scientific inspection of our meat and milk. He spoke of the spreading of the disease actinomycosis, showing the necessity of better and more thorough inspections of our meats and stock, and of more rigid laws by the Government to stamp it out. Prof. Law also thought it would be a good idea to have a Veterinary Examining Board, similar to the Royal College of Veterinary Surgeons of England. Several of the veterinary surgeons in the room expressed their opinion and stated the urgent needs of veterinary surgeons on all our local health boards, and as inspectors of live stock, dressed meats, milk, and of all private and public dairys, showing that the percentage of contagious diseases which our medical men have to cope with are caused and produced by infected meats, impure milk and unhealthy stables.

The reports of standing committees were then received and accepted. Dr. Morris then reported the action taken at the meeting of our last Legislature. When the matter of better legislation came up before the Society every member in the room showed his individual interest by pledging himself by all honorable means to try and gain the assistance of all his friends to aid in petitioning the coming Legislature to grant better laws and better protection to the qualified veterinary surgeon.

By-Laws and a Code of Ethics were unanimously agreed upon by all members present, and adopted.

The balance of the evening session was taken up by a number of the members communicating and describing important and interesting medical and surgical cases that had come under their personal observations in their recent practice. The discussions caused by such communications were not only interesting, but were highly instructive to all members present, showing that the veterinary profession of to-day is composed of thoroughly educated and scientific men, who spend their time investigating and treating the numerous diseases and ailments of our live stock, in a more scientific manner and with better results than has ever been known in past generations.

The question of papers for the next meeting in January, 1891, was then discussed, and the following gentlemen were appointed to prepare papers:

Prof. James Law, Dr. Jno. A. Bell, Dr. A. L. Hunter, Dr. H. Sutterby, Dr. A. McQueen.

The Censors then met and filled out certificates and delivered to members who were present. The meeting continued in active work until late in the afternoon of July 16th, when an adjournment was made to the second week of January, 1891, subject to the call of the Secretary.

And thus closed two days of hard work, of one of the most successful, enthusiastic and interesting meetings of veterinary surgeons ever held in the State of New York.

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## OBITUARY.

### ARMAND C. GOUBAUX.

It was our sad duty to notice in our last issue the death of the last of our worthy teachers during our sojourn at Alfort—Honorary Director Armand Charles Goubaux, who succumbed on the 29th of June to a disease of the bladder from which he had been suffering for several years. His funeral took place on the first of July. Graduated in 1831, he soon entered the school of Alfort and successively held the positions of Professor of Anatomy, and later on, that of Director of the school. Author of many valuable scientific veterinary works and a member of several scientific societies, Director



Goubaux, one of the leaders of the French veterinary profession, was liked by all who approached him, and in the various honorary positions which he held in his professional career had made a large number of friends, who all appreciated his genial and kind-hearted manner towards all, as well students under his tuition or direction, as confreres or colleagues of his long professional life.

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GILBERT A. LATHROP, D.V.S.

It is with great regret that we have also to announce the death of Dr. Lathrop, which took place under sad circumstances on the 4th of August, as the result of severe injuries he had received in driving a pair of runaway horses, when he was thrown down, falling into a creek where, on account of the injuries he had sustained, he was drowned. Dr. Lathrop, who was a graduate of the American Veterinary College, received his diploma in 1888 and after serving a year as house surgeon at the hospital department of the college, had started practice in his home in Pennsylvania, where his congenial disposition and his ability as a practitioner made him a favorite among those who knew him. Dr. Lathrop at the time of his death was twenty-three years of age.

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HONORARY PROFESSOR H. TOUSSAINT.

As we go to press the news reaches us of the death of M. A. Toussaint, honorary professor of the veterinary school of Toulouse, which took place after a long and painful illness.

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REGISTER OF GRADUATES OF THE MONTREAL VETERINARY COLLEGE.

Alloway, C. J.....	Minneapolis, Minn .....	1869
Audrain, H.....	.....	1879
Austin, R. D.....	Plattsburgh.....	1889
Ball, E. P.....	Stanstead.....	1884
Baker, M. C.....	6 Union Avenue, Montreal.....	1879
Baker, Austin*.....	Chicago, Ill., U.S.....	1876
Baker, G. S.....	Chicago.....	1887

Bancroft, C. D.....	Knowlton, P.Q.....	1884
Becket, G. C.....	Montreal.....	1888
Bell, Wm.....	Kars, Ont.....	1883
Bergeron, L. H.....	Bord-à-Plouffe, P.Q.....	1881
Bergevin, Hector.....	St. Timothée, P.Q.....	1879
Bisailon, Hilaire.....	St. Valentin, P.Q.....	1880
Blackwood, Thos.....	Boston, Mass., U.S.....	1876
Blanchard, M. G.....	Victoria, B.C.....	1884
Brodie, Jas.†.....	Bloomington., U.S.....	1883
Brown, D. S.....	Geneva, Ill., U.S.....	1877
Brown, M. S.....	England.....	1880
Bruneau, O.....	Montreal.....	1872
Bryden, Williamson.....	Boston, Mass., U.S.....	1871
Campbell, D. E. P.....	St. Hilaire, P.Q.....	1882
Carter, E. I.*.....	Pittsburg, Pa., U.S.....	1881
Chandler, A. J*.....		1882
Clement, A. W.....	Baltimore, Md., U.S.....	1883
Couture, J. A.....	Quebec.....	1873
Craig, W.....	Cornwall, Ont.....	1888
Cressy, Noah, M.D., Ph.D.....	Amherst, Mass., U.S.....	1878
Cross, A. E.....	Mosquito Creek, Alberta.....	1884
Crevier, E. C.....	Peterboro, Ont.....	1883
Crossman, Geo. E.....	Brushton, N.Y.....	1890
Crundall, E., M.R.C.V.S.....	Geneva, N.Y.....	1884
Chevalier, J. B.....		1873
Cummings, P.....	Quebec.....	1880
Darling, Andrew.....	St. Louis, Mo.....	1890
Darling, R.*.....	Milwaukee, Wis., U.S.....	1889
Daubigny, V. T.....	Montreal, P.Q.....	1879
Dawes, M. A.....	St. Ann's, Que.....	1888
Dillon, G. P.....	Toronto.....	1889
Drouin, C.....	Montreal.....	1884
Duncan, J. A., M.D.....	Victoria, B.C.....	1884
Dyer, C. C.....	Sutton, Q.....	1886
Farley, O. C.....	Boston.....	1876
Ferries, James.....	Beverly, Ont.....	1868
Feron, T. E.....	Chicago.....	1887
Fogg, J. C.†.....	Boston, Mass., U.S.....	1876
Fortin, O. D.....	Montreal.....	1885
Gadbois, O.....	Terrebonne, P.Q.....	1882
Garland, C. S.....	Montreal.....	1885
Glass, Alex.....	Philadelphia, Pa.....	1882
Goddard, J. G.....	Brunswick, Me.....	1889
Hall, W. B.....	Quebec.....	1877
Harris, A. W.....	Ottawa, Ont.....	1880
Harris, J. G.....	Duluth, Minn.....	1889
Hayman, Julien.....	Boisevain, Man.....	1890

Hébert, Servile.....	St. John's, P.Q.....	1877
Henry, J.....	Charles City, Iowa.....	1883
Hinkley, N. P.....	Buffalo, N. Y.....	1880
Hoare, E. W., M.R.C.V.S.*.....	Cork, Ireland.....	1885
Jakeman, William.....	Halifax, N.S.....	1880
Keys, A. A.....	Minneapolis, Minn.....	1885
Labelle, Jos.....	Ste. Dorothée, P.Q.....	1882
Labelle, Jos.....	Ste. Rose.....	1884
Lamb, C. G.....	Denver, Col.....	1885
Lévesque, Chas.....	Berthier (Upper).....	1871
Lévesque, Alphonse.....		1879
Lapointe, R.....	St. Scholastique.....	1886
Lemay, D.....	U.S. Army.....	1879
Lyford, Chs. C., M.D., B.S.....	Minneapolis, Minn.....	1879
Magor, J. F.....	Chicago, Ill.....	1885
Maisonneuve, O.....	Terrebonne, P.Q.....	1885
Mayo, W. P.....	Wellesley, Mass.....	1885
Mears, A. W.....	Chicago, Ill., U.S.....	1885
Miller, Frank.....	Burlington, Vt., U.S.....	1887
Miller, J. A.....	De Kalb, Ill.....	1888
Milloy, John.....	Boston, Mass., U.S.....	1876
Mills, Wesley, M.A., M.D.....	Montreal.....	1890
Murphy, William†.....	Cambridge, Mass., U.S.....	1877
Miles, I. J.....	Charleston, Ill., U.S.....	1879
Munro, M.....	Lancaster, O.....	1888
Morin, C.*.....	St. Albans, Vt.....	1879
Murphy, J. A.....	Chicago, Ill.....	1888
MacCormack, A.....	Ormstown, P.Q.....	1875
Macaulay, H. R.*.....	Indianapolis, Ind., U.S.....	1888
MacLaughlin, James*.....	Newton, Mass., U.S.....	1877
McCurdy, J.....	Ormstown, P.Q.....	1889
McEachran, W., M.D.C.M.*.....	Denver, Col.....	1880
McEachran, Charles.....	Montreal.....	1884
McGarth, W.....	Chicago, Ill.....	1888
McGlue, John.....	Lynn, Mass.....	1890
McLellan, F. W.*.....	Bridgeport, Conn., U.S.....	1878
McMartin, H. J.....		1879
McWhinnie, H.....	Troy, N. Y.....	1889
Mylne, R. C.....	Indiana.....	1889
O'Connell, T. J.....	Salem, Mass.....	1883
Ormond, Chas. H.....	Milwaukee, Wis., U.S.....	1881
Pagé, Joseph.....	Lotbinière, P. Q.....	1880
Paige, J. B.....	Amherst, Mass.....	1888
Parker, J. M.....	Montreal.....	1889
Patterson, Wm., M.R.C.V.S., M.D.....	Montreal.....	1869
Paquin, Fred†.....	St. Andrews, P. Q.....	1883
Paquin, Paul.....	Columbus, Mo., U. S.....	1883

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Pomeroy, B. A.....	St. Paul, Minn.....	1883
Price, Richard.....	St. Paul, Minn., U. S.....	1881
Pierce, Benj. D., M.R.C.V.S.....	U. S. Army.....	1881
Privé, P., M.D.....	Terrebonne, P. Q.....	1873
Prévost, Vital.....	Sherbrooke, P. Q.....	1876
Robins, W. P.....	.....	1883
Roberts, J.....	West Shefford, P. Q.....	1888
Rouif, E. E.....	Montreal.....	1885
Robinson, C. B.....	Washington, D. C., U. S.....	1882
Robertson, J.....	Portland, Oregon.....	1888
Rowat, A. R.....	Honolulu.....	1887
Ryan, John.....	Chicago, Ill., U. S.....	1877
Sangster, Geo.....	Huntingdon, P. Q.....	1886
Scanlan, Henry.....	Montreal.....	1890
Skaife, F. W.....	Montreal.....	1889
Simpson, W. M.....	Greenfield.....	1889
Simpson, C. R.....	Boston, Mass.....	1887
Smith, H. D.....	Montreal.....	1888
Scott, W. F.....	Sweetsburg, P. Q.....	1884
Skally, J. M.....	Boston, Mass, U. S.....	1882
Thomas, F. S., M.D.....	Hanson, Mass., U. S.....	1879
Torrance, Fred., B.A.....	Brandon, Man.....	1882
Torrance, W. J.....	Cleveland, O.....	1887
Trudel, N. Albert.....	Three Rivers, P. Q.....	1884
Turcot, J.....	Montreal.....	1885
Walsh, R. N.....	Huntingdon, P. Q.....	1890
Wardle, Walter.....	Montreal.....	1882
Wieland, E. A.....	Buffalo, N. Y.....	1889
Willyoung, Lester, E... ..	St. Paul, Minn.....	1890
Winslow, Charles.....	Rockland, Mass., U. S.....	1879
Williams, W.*.....	Bloomington, Ill., U. S.....	1879
Whyte, J. D.....	..Rochester, N. Y.....	1886
Wroughton, T. A.....	Fort McLeod, Alberta.....	1886

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PAPER HORSESHOES.—Experiments are now in progress in Germany with horseshoes made of a substance which includes a large proportion of paper in its composition. This shoe adheres to the foot better than those made of iron, resists the action of water, and prevents the horse from slipping, by becoming rough with use.—*Revue Scientif.*

# AMERICAN VETERINARY REVIEW,

OCTOBER, 1890.

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## EDITORIAL.

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UNITED STATES VETERINARY MEDICAL ASSOCIATION.—Twenty-seventh anniversary meeting—the day of consolidation—the *National Association* is established beyond doubt—all passed harmoniously—pleasant receptions—the welfare of the profession was at stake, hence the success of the meeting—large assembly of veterinarians—fifteen States represented—New Jersey, Rhode Island, Maine and Connecticut absent—meeting of the Comitia Minora always slow and late—reception by Dr. Williams of Illinois—forty-two new members elected—a few dropped—the committees for once all ready to report—the election of officers confirms the desire of the members for friendship and harmonious work—the reading of the papers listened to by over one hundred members—interesting discussions follow—the banquet—numerous good toasts, well answered—our condolences to absent friends—*no revision of the by-laws.*

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—The twenty-seventh anniversary meeting has been held; the day of consolidation has passed and the fact of consolidation is accomplished. The veterinarians of both the East and the West have met in Chicago, and as the gratifying result of this meeting the Association has at last confirmed its right to the title assumed in 1863, at the Astor House in New York, and has established beyond doubt the fact that it was indeed a NATIONAL ASSOCIATION, and all of this has been accomplished not only without the slightest difficulty, but with the manifestation of a spirit of concord and harmony of feeling such as has never before been exhibited in this country by the members of a profession who have hitherto been almost entirely lacking in community of interests and sympathy of sentiment, and personally comparative strangers one to another. It

could, however, scarcely have been otherwise, all things being considered in the past. The veterinarians of the regions both east and west of the Alleghanies, who met in Chicago, knew that the great object in view, aside from social meetings and the reinforcement of existing links of friendship and acquaintanceship, was to be the consummation of an important measure for the advancement of the interests of the profession, no less indeed than a national exhibition of the army of those guardians of the national wealth, the value of whose offices to their countrymen Americans have at last begun to look at intelligently, and with a just appreciation of the estimation in which their noble calling should be held. These are among the results which are thus far secure, and who will venture to predict the further advantages which may accrue in the near future, to the Association, to the profession generally, and to each individual member and practitioner?

Considered altogether, the meeting was a grand success. More than 120 members answered to the roll call, and at one time we counted 109 members present, in the large room of the Auditorium building in which the meeting was held. Fifteen States, together with the District of Columbia, were represented, comprising Massachusetts, New York, Delaware, Pennsylvania, Maryland, Kentucky, Ohio, Michigan, Indiana, Wisconsin, Missouri, Illinois, Minnesota and South Dakota. For the first time in many years New Jersey was not represented, nor were Connecticut, Rhode Island, or Maine, and the absence of the faces of the faithful old members from these States threw a little gloom on the party which met by agreement in New York on Sunday morning to start from the city in company.

The Comitia Minora held a meeting on the morning of the 16th, and what a meeting it must have been! Certainly one of the old kind, long and tedious, for the session so encroached upon the hours of the afternoon, as to prevent the assemblage of the general meeting until 2:30 P. M.

Professor C. B. Michener, after listening to an address of welcome from Dr. W. L. Williams, V.S., of Bloomington, Illinois, responded in behalf of the Association, and then the

meeting settled itself to serious work. The reports of the various committees were successively called up and read and recorded, and we scarcely expect to be believed when we say that they were all represented. As the time occupied in the reading of these papers had brought the meeting quite into the middle of the day, their discussion was postponed to a later period, and the next meeting passed to the subject in order, consisting of applications for membership, forty in number, all of whom, with two honorary members, were upon recommendation of the Comitia Minora, duly elected. A few applicants, however, were not accepted, and quite a number had their names dropped from the roll. The election of officers followed, an incident of the meeting which to some members was possibly the critical event of the occasion. For ourselves, however, we cannot believe that any course other than that which was adopted, could have secured any respectable support. The election was made with careful respect to what might be called the rights of each section of the country, if indeed the existence of sectional "rights" of such a character can be conceded, but in fact, no weight was given to any such considerations. It was not a question of Eastern or Western prominence in the Association; it was a selection of officers from the membership, without other distinction than that of character and fitness, or other motive than that of securing by a fair canvass the selection of the best men for their positions and for the welfare of all, with a view to the highest advancement of the interests of the whole body. Professor R. S. Huidekoper was elected President, Dr. W. L. Williams of Illinois, was elected Vice-President, and the offices of Secretary and Treasurer were continued in the hands of those old servants of the Association, Dr. W. H. Hoskins, of Pennsylvania, and Dr. J. L. Robertson, of New York. The various committees were appointed at a later hour, and the first day of the meeting closed with a short discussion of the committee reports, that of the Committee on Diseases occupying, however, the greater part of the afternoon.

On the second day the meeting was called to order with a sufficient approach to punctuality, and the time was well im-

proved in carrying out the plan laid down in the programme, viz.: the reading of the papers of Dr. Salmon, on Bacteriology; of Professor A. Liautard, on Veterinary Jurisprudence; of Professor R. S. Huidekoper, on Contraction of the Horse's Foot. Papers were also presented by Dr. G. Berns, of Brooklyn, N. Y., J. C. Myers, Sr., of Cincinnati, O., Professor O. Schwartzkopf, of Minnesota, and others. The interest in the paper of Dr. Salmon was considerably increased by the magnificent illustrations presented by the author, consisting of a number of slides exhibiting microscopic preparations of hog cholera and Texas fever, shown through the stereopticon. The preparations were generally in good condition, and the points they illustrated, especially those in the pathology of Texas fever, were most interesting, as opening a new sphere in the researches of this bovine affection.

All the papers were followed by more or less discussion, and the meeting adjourned at the call of the Secretary, to meet on the third Thursday of September next.

In the evening sixty members partook of a magnificent banquet at the Palmer House, which apparently, no one failed to enjoy, not only in respect to the gastronomic quality of the good things served, but with an added zest derived from the evidence of the harmony which had characterized the meeting, and the renewal of the good fellowship firmly established between the veterinarians of the United States.

In closing this concise report, to which we will have occasion to add hereafter, we feel it to be our duty to express to those of our friends who failed to attend the meeting, our regret that their absence had deprived us of the great anticipated pleasure of taking them once more by the hand, but at the same time will proffer them a word of consolation, in case they should feel over sorry for their mistake in staying at home, by simply saying that this meeting was the largest, the most interesting and most satisfactory on all accounts, of any yet held by the Association, and was also so far unique in its proceedings, *that no proposal was offered for the alteration of the By-Laws!*

“FOR ALMA MATER'S SAKE.” In our last two issues, under



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this title, the attention of many of our readers, and likewise of the profession at large, was invited to the plan which was being carried out by Dr. Coates, through the alumni of the American Veterinary College, for the collection of a fund sufficient to empower that institution to erect a proper building. It gives us great pleasure to inform the friends of the undertaking that the plan is a success. The alumni have responded handsomely to the call made on them in behalf of their alma mater, and only eight thousand dollars now remain to be subscribed. Although Dr. Coates is likely to receive but few if any more answers to his circulars, there is still time enough for those who are yet late, to hurry in their notices of adhesion to the plan, and then the work of collecting will at once be started. The few thousands wanted will without difficulty be obtained from friends outside. We shall not fail to keep our readers posted in respect to the progress made in carrying forward the new undertaking.

But before closing our remarks on the subject we feel in duty bound to correct an erroneous statement contained in our July issue, where on page 171 we stated that in one of the attempts made by the Board of Trustees of the college, the sole result obtained was "a gift of \$25 contributed by some anonymous friend." We had thoughtlessly overlooked the fact that in answer to the same call, another check for the same amount had been forwarded to one of the members of the Board of Trustees by Dr. F. S. Billings. We regret our oversight in the July REVIEW, and take pleasure on this occasion in doing justice to the empressement and willingness of Dr. Billings in assisting the American Veterinary College in her efforts to find and found a new home.

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## ORIGINAL ARTICLES.

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### UNSUCCESSFUL OPERATION FOR THE CURE OF ROARING.

By W. L. WILLIAMS, V.S., Bloomington, Ill.

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In recording the following case of excision of the left ary-tænoid cartilage for the cure of roaring, without a successful issue, it is not intended to in the least discredit Dr. Fleming's

operation, but rather to point out possible errors and obstacles which the inexperienced operator may encounter, as well as some of the pathological changes which may follow and thwart our efforts to remedy the unsoundness of the animal.

The subject, a four-year-old heavy draft gelding, was so badly affected as to be utterly worthless, being not only incapable of any labor on account of the extreme dyspnœa, but did not cease to roar loudly with each inspiration when standing quietly in the stall. The case was so unusually severe, that bi-lateral disease was suspected, but careful examination revealed a distinct depression over the left arytaenoid cartilage, while the right appeared, so far as could be detected by external manipulation, to be in its normal position.

The animal was presented for operation at our infirmary, October 19th, 1887, and it was undertaken without the full complement of instruments advised by Dr. Fleming, ordinary straight scalpels and finger knives being substituted for the special knives recommended, but at that time not procurable here. We aimed to follow the Fleming method throughout, and so will note only the points of special interest.

On opening the larynx the left arytaenoid was seen to be perfectly passive, while the right cartilage was active and apparently normal. Quite unexpectedly we found about one or two fluid ounces of a thick viscid mucus resting in the concavity formed by the arytaenoid and cricoid cartilages, which it was necessary to remove before proceeding further, and probably owing to our surprise, we attempted to dislodge it with the sponges, by which we lost valuable time, permitting our patient to partly recover from the anæsthesia before we were ready for the essential part of the operation—the excision of the cartilage—and we were put to the necessity of holding the laryngeal wound shut until anæsthesia could again be produced. The left arytaenoid cartilage and left vocal cords were then carefully removed, except with possibly some haste, fearing a second return to consciousness before the completion of our operation.

Although, as stated, we followed as closely as possible the *modus operandi* of Dr. Fleming, we found, when the horse had regained his feet, that the hemorrhage from the seat of exci-

sion was far more important than anticipated, the blood escaping in almost a continuous stream, and increasing rather than decreasing in flow for several hours, necessitating the retention of the tampon canula in the trachea for some twenty-four hours. Otherwise, the animal progressed apparently well, ate promptly and readily as soon as food was allowed, and was returned to the owner, turned to grass and the wound properly attended to.

For some weeks everything seemed favorable, and a cure was definitely anticipated, but after ten or twelve weeks it became apparent that the animal was retrograding and that the operation was largely a failure. He gradually grew worse, and was finally returned to us, in March, 1890, for examination, and if advisable, for further operation, being at that time fully as bad as before treatment.

Upon external examination we found that the tracheal rings included in our original incision had collapsed, the trachea being flattened out transversely so that its sides were almost in contact, and its channel nearly occluded. This defect we decided to remedy by inserting a permanent silver trachea tube in the collapsed portion, and when opening the trachea for applying the tube, the larynx was examined by means of the electric lamp, and although it looked quite constricted, the right arytaenoid cartilage was still active.

The trachea tube failed, however, to relieve the dyspnoea, and the insertion of a tracheotomy tube was rendered imperative. After waiting long enough to fully determine that the dyspnoea was essentially laryngeal and insurmountable, the animal was destroyed and the larynx carefully removed and preserved.

Besides the aforementioned collapsed tracheal rings which offer nothing special in volume or consistence, there was noted a narrowing, especially from side to side, of the inferior laryngeal opening, and a well-marked, almost osseous hypertrophy of the cricoid cartilage throughout its entire extent, being quite unyielding and fully three-quarters of an inch in diameter at the sides, where the thickening is most marked.

The superior laryngeal opening was also considerably con-

stricted, apparently from excessive contraction of the cicatricial tissue, the right arytaenoid cartilage being drawn downwards and inwards. The muscles of the right arytaenoid cartilage were of normal volume and appearance, and in all respects, except as noted, the larynx appeared natural.

The extreme dyspnoea was apparently the result of the constriction at the upper portion of the larynx, with the resultant displacement of the remaining arytaenoid cartilage, but were this overcome, we are still confronted with the cricoid and tracheal constrictions, which although probably less important than the other, are yet quite serious.

A careful study of this larynx *in situ* with the known facility with which the animal swallowed during life, would seem to show that both arytaenoid cartilages can be removed by the Fleming method, with the same impunity as one, in so far as swallowing is concerned. Whether the oesophagus would in such a case descend low enough to partially occlude the laryngeal opening and thus still interfere with inspiration, is a point upon which we could not hazard an opinion. However, is not the removal of the right cartilage the most promising plan for successfully reclaiming some of those roarers which are still useless after the excision of the left arytaenoid?

To what shall we attribute the pathological changes enumerated? First, it is quite evident that almost from the start, the operation was not as neatly done as might have been. Dr. Fleming's treatise—"Roaring in Horses"—fails to forewarn the inexperienced operator regarding the large collection of viscid mucus which we encountered in the larynx and which it was necessary to remove, before attempting excision of the cartilage, and we inadvertently attempted to dislodge it with the handled sponges, whereas the large syringe which was at hand, as advised by Dr. Fleming for other purposes, should have been used here to withdraw the mucus, and no time would have been needlessly sacrificed.

This collection of mucus, judging from our literature, is probably very rare, there having been no previous mention made of it so far as we have seen. The temporary frustration of our plans in this way could only have a secondary in-

fluence, tending to annoy and disturb our confidence in the future stages of the operation.

The next and really essential difficulty encountered was the hemorrhage from the excision wound. The removal of the cartilage was performed as carefully as possible, and probably as well as most inexperienced operators could be expected to do at the first attempt. The cartilage came away quite clean, almost wholly free from other tissues, so we are unprepared to say if either through our inexperience or inadequate instruments, we unnecessarily wounded important blood vessels, or if the case was an unusual one in this respect.

The manipulation, application of styptics, etc., necessary to control this hemorrhage, no doubt aggravated the unavoidable inflammation in the wound of excision, and was probably largely responsible for the unfavorable contraction of the cicatrix and consequent narrowing of the superior laryngeal opening, and its further occlusion by the right arytoenoid cartilage being drawn downwards and inwards.

The very marked hypertrophy of the cricoid cartilage, and the consequent constriction of the inferior laryngeal opening, is not so readily explained, for although the same manipulation on account of the hemorrhage may have caused some irritation of this part, it seems very improbable that it could be wholly responsible, and the tampon canula scarcely touching this cartilage can be illy blamed for the pathological change.

The retention of the tampon canula for an unusual length of time was undoubtedly the sole, or at least main cause of the collapse of the tracheal rings involved in the primary incision, as such pathological conditions occasionally follow tracheotomy, and so far as observed, this result has happened only in those cases where, as in this case, a plain incision through the tracheal rings is made for the insertion of the tracheotomy tube instead of removing a sufficient part of the rings to admit it without straining or distorting the involved cartilages.

We have, in this instance, departed from the general rule in recording cases of this operation, which has heretofore

been confined mainly on the one hand, to those cases which have terminated favorably, and which are consequently of little value except as items of news or to sustain Dr. Fleming's position (which scarcely needs it) that roaring can be so cured; and on the other hand, to those cases operated upon by inexperienced persons like myself, which have terminated disastrously, and which, so far as we have seen, are generally devoid of pathological data or interest, and designed only to throw discredit upon the illustrious inventor of the operation, which with careful study promises, in spite of adverse criticism, to accomplish much good.

With the hope, therefore, that in reporting this case, we have in part at least revealed some changes heretofore unnoticed, and perhaps suggested some imperfect means for avoiding them, we feel warranted in recording it as a slight addition to the clinical study of this very interesting operation.

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## RECTAL EXAMINATION AS AN AID IN A CORRECT DIAGNOSIS OF CERTAIN DISEASES.

By J. M. PHILLIPS, V. S., Wichita, Kan.

A paper read before the Kansas Veterinary Medical Association.

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*Mr. President and Gentlemen of the Association:*—The subject of this article is one to which I have been applying all my odd moments for some months past, hoping to give you something that is very new or interesting about it. The subject itself does not convey to your minds the idea that it would take any deep study on my part to say a few practical things about it, and that is just why I chose it. Not being able to finish a paper I was preparing for this meeting, I laid it aside for the present and in the emergency chose this.

In this paper I am not required to give the pathology or even the treatment of any of the diseases that this subject touches upon. One particular disease in all its phases is subject enough for an essay of varied lengths. Volumes have been written on tuberculosis, pleuro-pneumonia and hog cholera and many other diseases, some the pathology of

which we know but very little about and we know still less about the successful treatment of them. Some have one theory while others have another of the same disease. So we, the veterinarians of the State of Kansas, seeing the room for deep study and investigation in the pathology of them and the medication in the treatment of them, are not going to follow in the old ruts, if there is a better way, nor do we propose to always be nestlings and have everything dropped into our mouths. There can and should be just as much originality and research in the Kansas veterinary surgeon as in those hailing from any other State, if there is not then we are different in our dispositions from every other class of citizens in the State.

When we first leave the college halls we are like young birds just leaving their nests. We are fat with scientific facts that have been crowded into our minds; we know this and that, but not so much from personal experience, for it is limited. In practice we gradually lose the adipose part of our education but the muscular part begins to develop. Our practice is somewhat mechanical at first, but originality "steals upon us like a snowstorm in the night." Original ways, manners, thoughts and ideas are what we are always anxious to read of in our journals as well as to listen to in a gathering like this. I hope we may have some original ideas expressed in the discussion following the reading of this paper.

I venture the assertion that there have many horses died, under the care and treatment of *skillful* veterinary surgeons, animals whose lives might have been spared had the veterinarian taken the precaution earlier in the disease and made a rectal examination.

I admit it is not a pleasant task, as are many of the veterinary duties, but when that is the thing to do, roll up your sleeves and do it cheerfully. As to when it should be done, I will speak later.

The manner of making a rectal examination is important, though the rectum is not such a delicate organ, yet it should be handled very cautiously.

The rectum can first be emptied by an enema of warm

water and soap or by an injection of glycerine; the water is preferable from its not exciting contractions of the bowels; this will allow the hand to enter farther in and their relaxed walls will be more easily manipulated. After the rectum is nicely emptied, the hand and arm should be oiled and gently inserted into it. If it has been thoroughly emptied the arm can be inserted almost full length if necessary. Every movement should be made slowly so as not to wound it or excite contractions of it. In the latter case it will be a hindrance to you in examining those organs that are situated well forward in the abdominal cavity. With the slow gentle movement you give the bowel time to adapt itself to the position required. If you wish to feel the sides of the pelvis, as in a fracture of it, push gently in that direction until the hand comes against it. If you wish to feel the aorta in case of an aneurism, lift the bowel gently up until the hand comes against that pulsating vessel. With the hand once in the rectum many organs can be outlined, especially when they are in a pathological condition or position. The outline of the pelvis, the prostate glands, the urethra, the bladder, the ureters, the kidneys, the aorta and its terminal branches, the vena cava, the double colon and the base of the cœcum, the portions of the small intestines, the internal inguinal rings and the vas deferens in a stallion, and the spleen probably when it is very much enlarged. Not attempting to enumerate all, I probably have omitted some; suffice it to say there are a great many organs that can be reached per rectum.

As to *when* we should examine, is a very important question and one which I will not attempt to answer in a precise manner but only in a general way. Of course I would not advise the practice of it in every case when a horse kicks at or looks around at his belly, but in *all protracted cases of abdominal pain*. If your treatment does not have the desired effect upon your patient, you would naturally make a closer examination. If in this second examination you do not find the cause of the obstinacy, *then make the rectal examination*, feel for the organs that the symptoms might indicate to be affected, and to your surprise sometimes the diagnosis is made very



easily. If it is a protracted case when it comes to you, and you are not thoroughly satisfied as to the cause and you decide to use very active agents (as eserine) from the start, better make the examination first. You could have rupture of the intestines where it might have been avoided ; be satisfied that your patient is prepared for such treatment.

Prof. Williams in his "Principles and Practice of Veterinary Medicine," page 554, after describing the symptoms of an animal suffering with an intestinal concretion weighing about ten pounds, which proved fatal, says: "In one case examination per rectum enabled me to feel and remove a calculus from the rectum, the animal being immediately relieved." He further says: "This shows the necessity of such an examination in all cases of abdominal pain."

A list of most of the diseases, as a class, brought before your minds this evening, in which rectal examination is a satisfying means of the proper diagnosis, might surprise you somewhat.

Constipation from the following causes :

Paralysis of large intestines, paralysis of rectum, inflammation in other organs adjacent to rectum, producing an excessive heat in the fæces and also the voidance of passages resulting from the pressure on the inflamed organ, thereby causing pain and as a result the misplacement of some abdominal viscera.

2. Impaction.
3. Colic, with distended bladder.
4. Hæmorrhoids.
5. Rectitis from malpractice or other causes.
6. Pelvic deformities and fractures of certain parts of it.
7. Pelvic abscesses.
8. Deep tumors in the gluteal region.
9. Intestinal concretions.
10. Cystitis,
11. Nephritis.
12. Calculi of bladder, ureters and urethra.
13. Hernia and its reduction by manipulation.
14. Diseased ovaries.
15. Ridglings.

16. Retention of urine, from enlargement of prostate glands, cystitis or urethral calculi, excessive accumulation of fœces in the rectum.

17. Aneurism.

18. It is also claimed that when the spleen is enormously enlarged it can be detected per rectum.

With this list of about twenty different diseases which have been diagnosed, or a diagnosis verified by rectal examination, nearly all of which produce symptoms of abdominal pain, do you wonder at the assertion of Prof. Williams?

The remainder of the time allotted to me this evening I will devote to relating two cases in practice. I shall have to be very brief. The time will not allow me to enter into or relate cases of all the diseases enumerated above, but I must crave your indulgence inasmuch as the few remarks on them are principally of a practical nature and have been put together during a few hours in the evenings of the past few days.

It was several cases of scrotal hernia and two cases of misplacement of the cœcum that Dr. S. E. Phillips and I diagnosed by rectal examination and treated per rectum, that suggested this subject to me.

The first case of misplacement of the cœcum came to us on May 20, 1889. It was a large brown mule about twelve years old. He had been led behind a wagon a distance of about nine miles. His temperature  $105\frac{2}{3}^{\circ}$ , pulse 100, much prostrated, mucous membranes livid. The owner told us that the mule was taken with colic about eight days ago and he had been running down in flesh ever since, till he began to think he would soon die, so he thought he had better bring him in and see if a horse doctor could do anything for him.

In answer to the question of "What have you given the mule?" He said: "After we got him over the hard spell at the beginning, we saw he was still uneasy and was not having any passages, so we gave him a quart of raw linseed oil and waited twelve hours; then gave him another pint and waited about a day again and gave him a pound of salts, and later on some more salts. When that didn't work we gave some melted

fresh lard." No wonder the mule had a haggard appearance.

We examined the mule and concluded that he was pretty weak to stand an injection of eserine, yet that would be better; with all that oil and salts and lard in him, he would soon succumb, so we gave a hypodermic injection of  $1\frac{1}{2}$  grains eserine, which was followed in about thirty minutes by violent straining, with protrusion of the rectum, but no passage of fæces. After the effects of the eserine had passed away, we made a rectal examination. This was hard to accomplish as there was a large distended body filling the pelvic cavity, but lying closer to the right than to the left side. By manipulation it was found to contain gas, and its shape, its muscular bands and its origination from the right illiac region was evidence enough to identify the organ, while its position accounted for the distention.

When once diagnosed the treatment was simple and efficient. It was so large and tense that it could not be pushed ahead and it could not be replaced without surgical interference. With a common trocar and cannula the hand was inserted into the rectum and the trocar plunged through the walls of the rectum and cœcum, allowing the gas to be liberated. The walls of the cœcum had no sooner collapsed than it loosely dropped over the rim of the pelvis into place. A small injection of eserine brought fæces, oil, etc. in a very few minutes. We discharged the mule from our hospital in a few days, looking and feeling much better and having passages as regularly as his mate.

ANOTHER.—On Friday, Nov. 8, 1889, we were called to the Emporia Avenue livery barn to see a brown horse. He was stretched out in a position to pass urine, straining occasionally and passing small quantities of urine. He was quite uneasy, yet not suffering intensely. He was at this time passing some fæces. By questioning the stable men, there was nothing to indicate any symptoms of bowel trouble, but all the symptoms they had seen and all that showed while we were there, were those of the urinary apparatus. Yet to us it was a peculiar case. The temperature was normal, pulse the same, a fair appetite for food and water, yet he was in some

pain and at times very restless. The treatment was directed to relieve pain in particular.

Another visit was made on the 2d, and an examination made per rectum.

The same shaped organ met the hand as in the above case, though not so large. This was filled with hardened fæces.

The treatment in this case was not so easily determined upon as in the mule. He was given a good physic ball and put on light sloppy food. When the bladder became distended so that the pressure of the cœcum with its contents would cause the animal to be uneasy, we would draw the urine and the animal would be quiet again until it refilled. With four days of laxative treatment, the horse resumed his usual work.

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## THE INDUCTION OF NARCOSIS IN HORSES.

Translated from the German by RICHARD MIDDLETON, A.B., D.V.S., Stuttgart, Germany.

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I have, for the purpose of performing operations in our surgical clinics, anæstheticized numerous horses and other large animals. From this experience I am in a position to state that the widely diffused view of the danger accompanying this undertaking is utterly false. Ten years previous I pointed out this error, and at that time considered, in consecutive order, the causes which led to such a view. My late results have only corroborated these statements.

Statistical minutes were made of all these cases, and the length of time until the appearance of insensibility, together with the quantity of the agent used, were exactly noted; in like manner were the race, age, sex and weight of each individual registered. Since I have no knowledge of like statistics, I will therefore place before the profession an average of the cases, and therewith a description of the method.

With one hundred and twenty-six horses narcotized, (thirty-one stallions, thirty-eight mares, fifty-seven geldings), it required on an average, twenty minutes up to the period of cessation of corneal reflex before complete unconsciousness appeared, and three and one-half ounces of chloroform, or six

and one-half drachms for every two hundred and twenty pounds; this narcosis lasted about twenty minutes. In foals from one to two years old, three and three-quarters to five drachms were sufficient in eight minutes to effect the narcosis; the shortest space of time this lasted, was in one case eight minutes, one nine minutes and two ten minutes. A four-year-old gelding was narcotized in seven minutes by one ounce of chloroform. In twelve cases of the one hundred and twenty-six, one-half hour was necessary; in four cases from thirty to forty minutes were requisite to induce the narcosis. With stallions this appeared in eighteen minutes, with mares in nineteen minutes and with geldings in twenty-two minutes: further, the stallions needed three and one-third ounces, mares three and one-quarter ounces and geldings three ounces of chloroform respectively. In seven cases, (three stallions, two mares, two geldings) the effect was induced by one and one half ounces, and opposite to this, eighteen cases, (five stallions, four mares, nine geldings) required over four and one-half ounces. In one gelding seven and one-half ounces were used, and in one English thoroughbred seven and two-fifths ounces. The average age of the stallions was five, the mares nine, and the geldings seven years.

It was noticed that the quantity of the chloroform needed depended upon the method of applying. (There was no essential difference between the English and German chloroform). Less chloroform was used when slowly administered and when mixed with warm air, than when rapidly given; the quantity of this agent used can be said to stand in inverse proportion to the length of time occupied before the desired influence is brought about. The race of the patient exercised little, if any influence upon the quantity used or the time necessary to produce unconsciousness; but geldings consumed more than stallions or mares.

In twenty-eight cases, seven and one-half grains of morphine were injected previous to the inhalation, and in these three ounces and fifteen minutes were consumed in securing narcosis. Also in eight cases, the latter was produced by a

mixture of equal parts of chloroform and ether, and of this six and one-half ounces, and one-half hour were consumed before insensibility. One ass consumed in fourteen minutes one and one-quarter ounces, four male goats and three sheep four and one-third drachms of chloroform in six minutes. In all, I have effected anæsthesia by inhalation in more than two hundred cases; *in not a single case were there detrimental results of any kind; not one death; not a single uncomfortable consequence.*

When morphine was previously given, the patients developed unquietness and gave more or less trouble, which was not the case when chloroform exclusively or chloroform and ether were given. It is easy to comprehend that in some operations this struggling amounts to a serious consideration. The dose of morphine has only an inconsiderable effect upon the patient; neither the time nor the quantity of the means is materially lessened; I never use morphine. The mixture of ether with the chloroform, recommended on so many sides, requires more time, and with this more material also; this, together with the later innovations, are not to be recommended. Instead of the commonly used sponge, which hinders to a considerable degree the current of inspired air, I use a cloth of flannel eight inches square.

After the animal is thrown, there is but one nostril visible; over this the last named flannel cloth is placed, and chloroform dropped upon it, directly over the nostril, at the rate of twenty to thirty drops in ten minutes; an interim of ten minutes is now taken, and then again follows the dropping (preferably in a burette glass). Every two or three minutes the nasal cavity is sponged out; this must also be done when the cloth is wet through, either from carelessness or otherwise. The object of this is to remove any chloroform lying upon the schneiderian membrane, and so preserve the latter from the caustic effect of this medicament, (for this reason is the flannel preferred to the old method of sponges which are wet with the liquid and laid directly upon the mucous membrane). Care must be taken that during the inhalation the under nostril remains open.

There are other necessary precautions to be taken, after the horse is upon the ground. The girth is loosened or entirely dispensed with and the assistants must be instructed not to sit upon the chest, although they may take a position upon the region of the gluteal muscles when occasion requires ; in other words, the respiration must remain absolutely free. During the administration, the pulse must be noted, together with the respirations ; these at first are increased, but soon return to normal, the inhalation, however, is to be suspended upon irregularity of breathing, and when the character of the pulse betokens a weak heart. In a single case I observed general muscular twitchings (clonic spasms) which also caused me to cease the chloroform. A stage of excitement is exhibited by some horses, but with the generality it is seldom or never seen ; it is manifested by neighing and struggling in the hobbles ; it lasts generally only a minute, and is followed by the stage of depression.

Many horses close the eyes shortly after the inhalation is commenced, and a rolling of the same is also sometimes noticed, a short period of nystagmus. With the diminution of consciousness and irritability, the animal usually reopens the eyes, or more properly, the lids involuntarily part. From the fact that even before full unconsciousness, many patients fail to show irritability of the eye when the cornea is touched, I find it of little advantage to use the corneal reflex to determine when the administration of the anæsthetic should cease.

The rattling in the throat, which when occurring in man, demands immediate attention, is not, in our patients so imminently serious. It is produced by the vibrations of the velum pendulum palati consequent upon the efforts of the animal to respire through the mouth ; to avoid this the tongue is held outside the mouth at the commissure ; should consciousness return or manifest evidences of returning, the chloroform is re-applied ; when full narcosis is once induced, it remains about twenty minutes after the removal of the inhalation apparatus.

I have held subjects under complete narcosis for from one to two hours by simply reapplying the flannel, etc., as soon as

irritability is manifested. After the completion of the operation, the hobbles are removed, but the patient is allowed to lie as long as he does not manifest any desire to rise; when compelled to stand, the gait is unsteady, and it is much safer to station a man at the tail who should be instructed to steady the motions of the body, and prevent a probable headlong fall.

In long lasting and deep narcosis, the movement of respiration ceases generally while the patient is in a dazed condition, and after the operation is ended. This causes great alarm among those unacquainted with the course of such cases. The synchronous movements of the chest are re-established by a sharp, stinging blow with the palm of the hand upon the wall of the thoracic cavity; in this manner I have returned the movements in one-half to three-quarters of a minute after they had ceased. With the modern apparatus of Fohringer a saving of chloroform is secured; the time, however, is longer than by the method herein described.

The intravenous injection of chloral hydrate and the intrarectal application of ether are not to be recommended for the purpose of anæsthesia. In the first there is much difficulty in fixing the dose, and a venous thrombus from the wound of the injection is by no means precluded. Moreover, the narcosis so induced, passes rapidly away and cannot be relied upon. In an old experimental case, I saw death ensue from apnœa brought on by administering one and one-half ounces of chloral hydrate.

The intrarectal ether injection produces only after a long time, a very incomplete and unreliable anæsthesia. The effort to use bromäthyl as an anæsthetic was not successful, from the fact that this agent froze during the administration and therefrom was irrespirable. The method of gradually dropping the chloroform upon a flannel cloth placed over the nostril can be recommended when narcosis is needed. It is possible with horses as with men, that individual idiosyncrasies may cause the application to be dangerous; in general there is very little danger associated when carried out as herein stated.



## LYMPH EXTRAVASATE IN POSTERIOR LIMBS OF EQUIDÆ.

Translated from an article by Prof. Hoffman in the *Monatsheft für Thierheilkunde*, by RICHARD MIDDLETON, A.B., D.V.S. Stuttgart, Germany.

Quite in the same manner as the traumatic collection of blood originates, does the collection of serous fluid originate, which is at times seen upon one or other of the posterior limbs, more frequently in horses. Cases of such extravasate have been reported in cows and upon the ears of dogs. The swellings do not arise from the oozing of lymph through the lymph spaces in the fibrous tissue, or from the physiological foramina in the vessels themselves; but from a rupture of the latter, a lymphorrhagia is established, and according to the laws of gravity the liquid collects at some inferior point. These tumors are not infrequently diagnosed as hæmatomæ, but when the surgeon opens them he is surprised to find not blood, but a transparent yellowish, or perhaps, reddish fluid. In human medicine, Gussenbauer, writing upon traumatic injuries, rehearses cases of "blood extravasate," in which not blood but serum were found; the coagulum which should have been present, upon this hypothesis, was considered to have been absorbed, and that the hæmaglobin of the escaped corpuscles had imparted the red color which was occasionally seen.

The first description of this species of swelling was written by the French surgeons, Velpeau and Moret-Lamottée. It was soon noticed that the tumors arose from, as a rule, one kind of injury; to wit, a severe obliquely delivered blow on such regions of the anatomy in which fascia was present. In twelve cases recorded in man, seven were caused by a wheel passing over the spot; the remaining five were caused by blows tangentially received.

Pathology: There must occur "a gliding of the superficial portion of the region, upon the solid underlying parts," through which the skin is not only torn from the subjacent muscles, but the still deeper tissues are compressed.

Diagnosis: Directly after the infliction of such a wound as the above mentioned agents cause, there arises a swell-

ing which at first does not manifest the general characters of an inflammatory production, and which gradually and continually enlarges (extending over a few days or even weeks).

The contents of the cavity remain, under all conditions, in a fluid state, with not the smallest formation of coagulum, so long as the atmosphere does not reach the interior. The tumor yields upon palpation and succussion—unequivocal proof that the bulk is fluid. The skin over the swelling is not painful. Blood constituents are either not at all present, or only so in inconsiderable quantities, and the chemical composition is similar to that of blood serum and lymph. After the evacuation, the serosity continues to flow from the fact that the torn lymph vessels are not occluded as the blood vessels are after the opening of an hæmatoma; as a consequence, the course of the former is more tedious and dangerous than the latter.

When not incised, the contents seek a spontaneous opening, and frequently in earlier days caused death to those persons so afflicted by the extensive suppuration.

The therapy consists of first stopping the lymphorrhagia, and second, causing the resorption of the liquid. It is proposed to use compresses, bathing in warm water, or poultice with a mixture of alumen and plumbum acetatum, puncture, iodine injections, antiseptic operation; without incising one cannot expect a favorable result.

In the *Deutschen Zeitschrift für Chirurgie*, 1888, p. 344, the disease is considered under the name “decollement traumatique;” the author states that the condition up to the present time has been little considered. He distinguishes (*a*) superficial (*b*) deep varieties. In the former the skin is separated from the underlying fascia, and the pocket so made is partly filled with extravasate, but never completely so. The deeper sort has its seat either between the fascia and muscles, between the muscles, between the latter and periosteum, or between the periosteum and bone; it can appear without being in conjunction with the superficial variety. The size of the cavity varies as well as the appearance of its interior, which may be smooth, or show threads which bind it to the connec-

tive tissue. The etiology is essentially the same as previously described (which was written in 1880). Doubt respecting diagnosis can hardly be entertained, when these symptoms and history are considered; at first the small size, however, may be a factor of indecision, but from the character of continually increasing, this is not a permanent hindrance. The principal diagnostic sign is the latter history, together with the fact that the cavity is never completely filled. By gently tapping the swelling with the finger, a species of quivering is established. Shortly after the separation the skin loses its elasticity and sensibility, and since its blood supply has been perceptibly diminished, it is predisposed to gangrene. In general the prognosis is favorable if the case comes under correct handling. Suppuration seldom appears, but when a portion of the skin becomes gangrenous and falls away, then the process is a protracted one and tedious. The therapy consists in energetic surgery; in small enlargements elastic bandages generally succeed in eight or ten days. In the most cases, broad incision, antiseptic washing and bandaging alone succeed. The following is an account of a typical case. Horse used for riding purposes; in the afternoon a swelling the size of one's hand was observed, which towards evening became larger and caused the owner to send the animal to the college.

*Status præsens*: The general health is good, no pyrexia or lameness, but the wounded limb somewhat extended forward. On the exterior of the right thigh is to be seen a swelling one inch high, and extending over a space as large as a medium sized dinner plate; the swelling is not uniform, but bags inferiorly, giving a more bulging appearance to this portion; the same is soft and fluctuating, and upon the skin no wound or loss of hair is visible. The history developed the fact that while being brought to the riding floor, the patient had slipped and afterward slid some distance, but immediately rose to his feet, and shortly after went through with his exercise; nothing abnormal was observed until afternoon. Upon first seeing the subject my opinion was that the collection proceeded from a large blood vessel, and therefore declined to incise it, but ordered cold fomentations. Through the canula

of an exploring needle there flowed a reddish serous liquid, and upon enlarging the incision, from thirty-two to forty-eight ounces of the same were liberated. After a few days suppuration appeared, a portion of the skin became gangrenous, febrile symptoms complicated the case and healing lasted several weeks. I have observed a few similar cases, having the wound upon the same region and showing the same history; with these I have applied a very different and more successful therapy. The hair is first clipped over the swelling and at the most dependent portion is shaved; after fundamental disinfection, the incision is made at the shaven portion, and a short and thick drainage tube sewed in. The latter tube is made continuous with the epidermis by iodoform collodion, and at the end of the tube a ring of cotton is fastened by the same means, in this way seeking to avoid infection of and continual wetting of the skin by the dropping fluid. The loose skin is now sewed fast to the underlying tissues by deep perpendicular stitches, and afterward coating the whole sheared surface with cantharidine collodion or other counter-irritant completes the therapy. Care is taken that the patient does not rub the part; and further, no oats are to be given, every other day a small portion of water. On the eleventh day the drainage tube and threads were removed, and on the seventeenth day the horse was put to the saddle.

*Resume*: From the foregoing foundation, borrowed from human medicine, and upon the ground of cases related and observed, I believe I am justified in stating the following: Lymph extravasate, lymphorrhagia or décollement traumatique occurs in the domestic animals as well as in the human species. Its causes are: a fall and subsequent sliding; being struck with the pole or shaft in a tangential or oblique manner; during copulation from the motion of the anterior limbs upon the spinal region of the female; from the rubbing or striking of the body in going through a narrow doorway. Concerning the therapy; setons are held as dangerous; all fragments of torn tissue are to be removed by injections of caustic astringent solutions of the following: zincum chlor. 10 per cent.; ac. phenicum, 10 per cent.; hydrarg. chlor. corros.

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2 per cent.; creoline, 50 per cent. At the same time the general health must be allowed to suffer on account of the local indisposition.

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## CREOLIN.

By Professor Dr. Frohner, Director of the Pharmacological Institute of the Royal Veterinary College in Berlin.

[*Translated from the German.*]

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Under the name of Creolin the firm of Messrs. William Pearson and Co., of Hamburg, have brought before the notice of several German institutes and corporations a new disinfectant and antiseptic. I must candidly confess that with a daily increasing mass of new medicines I have only entered with very great reserve on a thorough examination of this material from a chemical and pharmacological point of view. An examination of three months has, however, shown that creolin may be looked upon as quite a material enrichment of our medicine chest. According to the information of the above firm, creolin is a product of dry distillation of coal, and indeed of a peculiar description of English coal. From these distillations of coal creolin is prepared by the addition of alkali in suitable and proportionate degrees. As regards the further chemical composition no details have been given by the firm, as the material has been for years patented in England. However, it is said to be a constant chemical substance.

The material produces a blackish, syrupy, pungent and tar-smelling liquid, which is packed in tins of 5 kilos. each. It is miscible with water in all proportions. The solution forms a milky emulsion. It dissolves also in alcohol. Besides the pure creolin and its solution in water and alcohol, there were also submitted for examination hard and soft creolin soaps, and also creolin powder for the disinfection of rooms, dens, etc. As a net result of my experiments with this material, it has been shown that creolin is non-poisonous, both volatile and permanent, and is a very cheap antiseptic. It belongs to our best disinfectants, and is in general to be preferred to carbolic acid. I have examined creolin according to the following particulars: •

1. As an antiparasitic for epizoa. Of all ectoparasites the mites of scab, especially of the class of sarcoptes, are the most difficult to destroy. The importance of these parasites as regards national economy is most apparent in scab of sheep (*Dermatodectes ovis*) which alone causes Germany a loss of several millions of marks every year (thus in 1884 nearly 250,000 sheep were found to be infected in Germany alone). In the dog likewise, mange, due to the presence of sarcoptes, also causes extensive losses. Of the animals brought to the Hospital of Dogs in the Berlin Veterinary School during the year 1886-1887 no less than 639 of the whole number (8,399 in all) were found to be suffering from this malady, or, in other words, over seven per cent. of all dog diseases in Berlin come under this heading. The remedies usually applied for mange are carbolic acid, arsenic, corrosive sublimate, tobacco, and balsam of Peru, besides alkaline medicaments. The last, as also the first three, are violent poisons, and a large number of mangy dogs yearly succumb to the effects of treatment with them. A cheap substance equalling carbolic acid in its action, without being possessed of its poisonous properties, would therefore be considered the *beau idéal* of a remedy for mange. To all appearances it has been found in creolin. In none of my numerous experiments was there the least trace of toxical (*i. e.* poisonous) symptoms to be observed. The dogs experimented on received at first 1 gramme (=15.432 grains), then two, five and eventually fifty grammes of pure, undiluted creolin internally, without evincing the slightest change in their general state of health. The same result was observed in horses similarly treated. This proves that neither when absorbed through the skin, nor even if licked off by the animals themselves, does creolin exert any detrimental effects. In order to draw comparisons between the results achieved by balsam of Peru and the effect produced by creolin, I caused six dogs affected with this malady to be inuncted on one-half of their body with the former, on the other half with the latter medicament. The effect of both seemed the same. But whereas the expense of treating a dog with balsam of Peru was 10 marks (ten shillings), the cure was effected by means

of creolin for 50 pfennige (sixpence). Besides, balsam of Peru exercises toxic influence on some animals, for instance on cats. For these reasons we feel justified in most warmly recommending creolin for the treatment of mange, and also especially for scab, in which disease it has for many years been employed in England, Australia, the Cape, New Zealand, and South America with most exceptionally excellent results. As regards the manner of administering creolin, I have applied it both in aqueous, as also in alcoholic solution (from 1 to 30 per cent.), and also in combination with soap (2 to 10 per cent). A mixture of 1 to 3 per cent. either with water, alcohol or soap, would seem to suffice in all cases.

2. As an antiseptic, creolin is used in the place of the usual 3 per cent. solution of carbolic acid and the one-tenth per cent. solution of corrosive sublimate. I have used it in aqueous solution, in the strength of 1 to 5 per cent. in various ways for operations, in wounds, cavities of abscesses, necrosis of bone, severe inflammation of skin, etc. A 3 per cent. solution of creolin has been shown by these experiments to be in all respects at least equal to a 3 per cent. solution of carbolic acid, or a one-tenth per cent. solution of corrosive sublimate. At the same time this substance is perfectly devoid of toxic properties, and can be applied to very extensive wounds for a long time without any danger.

3. In chronic eczema of non-parasitic origin, creolin produces the same beneficial effect as tar, without the objection of being poisonous. In this respect I should like to point out that creolin exhibits much similarity with the "so-called" "oleum carbonis detergens," which was sold as a secret preparation in England some years ago, and which most excellent remedy I at first had believed to be identical with creolin.

4. As an inhalation I have found creolin useful in 1 per cent. solution for infectious bronchitis and broncho-pneumonia, especially in epidemics. It produces the same satisfactory results as carbolic acid, but without its relaxing influence.

5. As a disinfectant for dog-kennels and stables, for cages and utensils, I prefer creolin, on the strength of my own experience, to carbolic acid. Its volatility gives it an advan-

tage over corrosive sublimate: I have made use of creolin in the shape of a 1 per cent. aqueous solution, as also as a disinfecting powder, in which form also it is sent abroad.

6. I have finally administered creolin internally with very good results. It is given in doses of one to two grammes in a 1 per cent. aqueous solution in cases of gastric and intestinal catarrh caused by infectious or zymotic agents. In a number of cases the results were quite astonishing. Creolin is indubitably infinitely preferable in such diseases to creosote, subnitrate of bismuth, tincture of iodine and naphthaline.

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### SAINBEL, HIS LIFE AND WORK.

By T. B. ROGERS, D.V.S., Woodbury, N. J.

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I have before me an old book, "Elements of the Veterinary Art," by Chas. Vial De Sainbel, late equerry to the King and professor in the veterinary college, to which is affixed a short account of his life. The book was printed in London in 1797. As the book is about to pass from my possession and find its most fitting resting-place in the library of Professor Liautard, the thought occurs that a short sketch of the life and times of the founder of veterinary medicine in England would be of interest to the readers of the REVIEW.

Sainbel was born at Lyons, January 28th, 1753. At that time his father was Mayor of the city and a person of good birth and importance. He early exhibited his bent toward the veterinary art, and through the kindness of his guardian, Monor de Flesseille, was enabled to pass the curriculum of the Lyons school where he was a teacher. Hence to Alfort as a junior professor. At Alfort he incurred the enmity of Chabert and Bourgelat, and a copy of a letter from the latter, found after Sainbel's death among his papers shows that a conspiracy was meditated against him, the Bastille being suggested as "the dernier theatre demonstratif" of Mons. our petit professeur en second.

The times were troublesome; no man knew how long his



head was safe on his shoulders, and probably concluding that absence of his body from Paris was better than the presence of mind needed to keep his head and neck connected if he stayed there, he resigned and returned to Lyons.

His next appointment was that of Demonstrator of Comparative Anatomy at Montpellier, where he stayed for five years. Again we find him in Paris as equerry to Louis XVI., endeavoring to regain his place in the Alfort school, but the effort being vain, he visits England in 1788; marries; again revisits France at the outbreak of the Revolution, but finding the times unsafe, he obtains leave to go again to England on pretence of buying horses for his patron's stud. The second head to fall into the basket was that of his good friend, Mons. Flesseille, so Sainbel lost friend and annuity together, and his patrimonial estate was confiscated. His fortunes were advanced in his adopted country by his skillful dissection of Eclipse, and his plans for the establishment of a veterinary school were discussed and adopted on the 11th of February, 1791. The President of the school was the Duke of Northumberland, and one of the Vice-Presidents was the eminent English surgeon John Hunter. On March 22d it was resolved that a *temporary* stabling for fifty horses and a forge house for shoeing should be built at St. Pancras.

The new enterprise was doing well and the future looked bright for its founder, when on Sunday, August 4th, 1793, Sainbel laid aside the scalpel for ever, and on August 21st, 1793, the founder of the London school passed away in his fortieth year. He was buried at the expense of the college in the little Savoy chapel in the Strand. Looking through his book one is struck with the grasp the man had on all parts of his profession; he was thorough. His preliminary discourse was a brilliant resumé on the progress of his art from the days of Chiron the Thessolian to the establishment of the schools of his own land. His lectures on Farriery are instructive reading to-day. The description of the high operation for quittor is most excellent, and it is interesting to note that he used the dressing of tinct. aloes and myrrh as many of us do to-day. His essay on grease has interest, in that it describes

a condition of things that has nearly passed away under the improved hygiene of our times.

In his essay on glanders he tells us that all his experiments lead him to the blind alley of incurability. Closing the book with its quaint though well executed plates, its wide margins and good letter press, we ask ourselves what would have been the present condition of veterinary medicine in England had Sainbel lived to a green old age. It would have stood on a much higher plane, for looking back at the work of the school since his day, we are obliged to admit that his successor has never arisen. There have been professors and professors, but only one Sainbel.

Note, however, that the seeds of veterinary medicine in the United States were also planted by one of Sainbel's compatriots. We owe more to him than did the English school to Sainbel. Fortunately, Providence has permitted him to watch the ripening of the seed he has sown, and it is doubtless the heartfelt wish of all of us that he will long stay to watch the garnering of the crop.

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## BLACK LEG.

GASEOUS CHARBON, SYMPTOMATIC ANTHRAX, BACTERIAN ANTHRAX.\*

By DR. P. PAQUIN, Columbia, Mo.

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### INTRODUCTION.

This malady causes the death of many thousand calves and young cattle yearly in our State, and it would be difficult to estimate the total annual loss in America. From all accounts, however, it seems that there is not a State in the Union free from it. One can scarcely read an agricultural paper without finding something about it. In Missouri, every monthly report to the Board of Agriculture, coming from farmers in every quarter of the State, furnish ample evidence of its extensive devastation and the powerless condition in which farmers and stockmen find themselves. In the hope of rendering some service to the State, we undertook the study

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\*Bulletin No. 12, Agricultural College Experimental Station.

of that disease, as far as our time permitted, (having under way, besides the regular official sanitary work, a programme to follow concerning investigations in Texas fever, the results of which have just been published in bulletin No. 11).

We did not intend to publish anything now, but we yield to the farmers' demand for information.

Unlike Texas fever, which was misunderstood everywhere, we found in black leg a malady fairly well understood, and hence to attain our object it was not necessary to lay a plan of investigation entirely original.

The extensive experiments and researches of Arloing, Cornevin, Thomas, Chauveau, and others in France have furnished us much material for comparative study, and finding that the disease in question is identical in Europe and America, we quote considerably from the above named authorities for the benefit of our people. As will be shown in this bulletin, we owe much to these scientists for their grand achievements, for to them, besides being indebted for the many scientific problems which they have solved, we owe the process of vaccination against black leg, which to-day saves millions of dollars to France, Switzerland and other European countries, and would save our stock raisers on an equal basis if they would only put the discovery in practice.

#### NATURE, CAUSE, SYMPTOMS AND LESIONS.

Black leg is a disease due to parasitic bacteria (or germs) which exist in certain localities, particularly low lands and luxurious grasses, and which when in the body of young cattle grow principally in the connective tissue (between the skin and flesh) and in the muscles, causing the appearance of dark, bloody, gaseous tumors.

The adult germ is of the rod form with roundish extremities. The parasite gains access in the body with the food by the alimentary canal. They penetrate from the bowels, like the absorbed nourishment, in various parts of the body, but localize chiefly under the skin in the loose connective tissue about the shoulders, hips, etc., where they find soils fit for their growth and reproduction. It is a disease of cattle almost exclusively, and like other germ disease, the suscepti-

ble animal, and particularly the well fed young calves, are simply the fields in which the parasites develop, generate and thus cause disturbance in the system.

The disease is not transmitted by contact, but is inoculable directly, as will be seen further.

The *nature* of this disease then is: A *specific, infectious* malady, contracted by young cattle on infectious grounds and other infectious places, and the essential cause is a germ.

As to the symptoms and lesions I shall mention only the characteristic ones, which are fever, lameness, and local swellings or black muscular tumors with formation of gas therein. The ordinary observer may notice the last named symptoms and lesions only.

As a rule the proprietor is surprised one morning, to find among his herd of cattle, his best, fattest calf, or yearling or two-year old dead. The body is already swelled to enormous proportions, and there seems no clue to the cause of such rapid destruction. On examination he finds on the body a local place more enlarged than the rest, and in cutting into it the flesh is found dark and even black as tar. The hand passed over the skin covering this enlargement, causes a crackling or crepitating noise much as the crumpling of paper in the hand; the knife causes a screeching sound in passing through the mass. These peculiar sounds are due to the gas generated by the germs growing in the tissues. Exposed to the air a little while, the dark and apparently bruised flesh regains its natural red color more or less, but not its natural *condition* in full.

In the tissues so abnormal at the time, may be found the germs of black leg.

Perhaps that for a couple of days there will be no more trouble, and the proprietor then will feel secure, but on the other hand as he watches, he may notice a subject more or less lame, in a fore leg or in a hind leg, and soon dullness will be appreciable.

On close inspection and hand examination the crepitation, if not the swelling, will be detected. From this moment it will not be long as a rule that the enlargement will be marked, and probably death will have gathered the patient, for very

few escape, even with the best treatment, when once the germs have caused much disturbance in the organs. In opening the body the intestines will be found more or less reddened, congested and thickened. The liver and spleen, which in essential charbon (or anthrax), and in Texas fever are gorged and softened, offer *little* if any change, although they contain the germs. The disease runs its course in a few hours to a few days. It is not uncommon to see demise within twenty-four hours of the appearance of the first external signs. Consequently medicinal treatment is scarcely practicable even if there were any remedies capable of positive service as curative agent. We have, therefore, to institute such practice among our herds as will prevent the occurrence of the plague, just as people take means to avoid small-pox and the like. It is only on the line of prevention that we can fight maladies *not* amenable to curative treatment, and even these had better be guarded against and prevented.

#### THE GERM OF SYMPTOMATIC ANTHRAX.

The microscopic parasite that causes the lesions and phenomenon known as a whole under the common term of black leg, is in the adult state in the tissues, a short rod with rounded extremities. On blood serum, nutritive gelatine, and vegetable albumen artificially prepared, it forms filaments composed of rods and other forms more or less spherical. The germs may be found in the bloody effusion that forms the characteristic tumor of black leg, in the tissues of that swelling, the liver, spleen, kidneys, lymphatic glands and the lungs. It propagates itself by fission and by spore formation, *i. e.* by the rods breaking off into shorter ones and by formation of seeds.

#### INOCULABILITY OF BLACK LEG.

The many opinions that have been formed concerning the cause of this affection, principally by those who have suffered through it, are so numerous and varied that it would be idle to attempt to disabuse the minds in error, by exposing the fallacies of each theory. Desiring only to give facts, the truth pure and simple, I herewith present evidence as to the causative agent.

One is apt to consider such obscure maladies as black leg as more or less impenetrable mysteries, and yet a few well

directed researches and experiments, in these days of scientific progress, are often sufficient to elucidate the most obscure point or question. Black leg, however, has been much studied in Europe. Indeed the veterinarians already mentioned (of the Veterinary School of Lyons) have long and patiently experimented (to the great good of the whole world). They have shown beyond all doubt, that it is specific and transmissible. Their inoculations from cattle to cattle, cattle to sheep, and to rabbits are conclusive. And yet, with all that, most of people on this continent have doubted to this day. Perhaps we are to blame for that, for our stockmen and farmers have not been informed widely, as was done in Europe, at government expense.

In order to lay the matter clearly before the masses, we made a few experiments. First, we too inoculated cattle from cattle, then sheep from cattle, rabbits from cattle and rabbits from rabbits, and though some writers have denied until now the transmissibility of the disease by inoculation, we have repeatedly succeeded in accomplishing it with serious or deadly results.

My first inoculations were made early in 1887, when filtered, fresh and unmodified fluid of a crushed piece of flesh from a black leg tumor was inoculated to four rabbits with fatal effects in two, and in one heifer with the effect of causing a characteristic tumor and lameness.

In examining the lesions of each sick inoculated animal, they presented the specific appearances of black leg, and the microscope revealed the true germs that produce it.

These limited experiments were certainly in line with the published reports of the French investigators.

Later the same year, I caused the practice of inoculation of *unmitigated* fluid from a liver, with the production of the characteristic tumor with fatal results in two calves five and seven months old respectively. This only confirmed former conclusions.

These spasmodic experiments could not be made of immediate practical use. Without assistance I had to travel officially almost constantly, and methodical laboratory work was almost entirely out of the question.

Late in 1889, however, we had occasion to test again the transmission of black leg and protective inoculation with a *modified* virus.

The following short table gives the results of some of our latest inoculations practiced with very strong virus taken fresh from typical tumors, or from livers or lymph glands of diseased subjects.

TABLE OF SOME INOCULATIONS OF BLACK LEG IN 1890.

<i>Date of Inoculation</i> 1890.	<i>Case and Mark.</i>	<i>Average temperature with- in 5 days.*</i>	<i>Results and Remarks.</i>
Jan. 28	Roan Heifer.	103° F.	Produced crepitation and severe lameness for some days; recov'd.
“ “	One Sheep.	103 1-5	{ Severe pain and enlargement with crepitation at point of inoculation; lameness quite pronounced; recovered.
“ 31	Heifer No. 4 in stable.	103 1-2	{ Virus apparently weak, but caused characteristic swelling of black leg; recovered.
“ “	Sheep in shed.	.....	Very lame; characteristic tumor of black leg in the thigh.
“ “	Rabbit in cage No. 10.	.....	Crepitation of side at point of inoculation; recovered.
Feb. 2	Heifer at Paquin's House.	105	Charateristic tumor at shoulder; died of true black leg.
“ 13	Small calf in lot.	102 4-5	Other signs than fever accidentally omitted in the record book.
“ “	Sheep.	.....	Typical case of black leg. Found dying and killed purposely.
April 1	Rabbit, marked in left ear.	.....	Died of black leg on the 4th of April.
“ 20	Sheep.	.....	{ Had been inoculated once before and recovered. Showed no illness this time.

In all cases in which death occurred or in which the inoculated subjects were killed purposely, the germs of black leg were found in abundance in the loose tissues between the muscles and their fibres, in the liver, spleen and other organs.

\*The average normal temperature of cattle is between 100 deg. and 101 deg. F.

## PREVENTIVE AND CURATIVE TREATMENTS.

As mentioned, the truly rational treatment of black leg is one calculated to prevent it, but, of course, it will break out here and there unexpectedly, in new places where the germs exist unknown to the people, in spite of any and all precautions unless it be inoculation. Therefore it does become necessary to attempt to limit outbreaks after their appearance, if one is so unfortunate as to be a sufferer thereby.

The first thing to do in the case of black leg is to *remove at once from the place* where the malady started, all the stock showing *no sign* of the disease and *leave the sick ones there*. Place the apparently well ones on higher and dryer lands if possible, or in a yard, or open, well-ventilated stable, and feed them dry fodder for a week or so and give them plenty of good, clear water—not filthy, stagnant pond or pool water.

During that period if you can procure black leg *vaccine* properly prepared, inoculate every subject twice, *i. e.* at six or eight days interval, and then nearly all, if not absolutely all, will be in a position to resist the germs of black leg, no matter where exposed and where they may find them.\*

On the belief that only the fattest and best conditioned calves or young cattle become affected, it has been suggested that a treatment calculated to impoverish the system would in a measure prevent black leg. It is partly on this basis that a change of pasture to a poorer one is recommended, and partly because by such practice the animals may be excluded from infectious soil. But on the same principle of impoverishment, the use of setons, or so-called rowels, has been prescribed. It causes copious suppuration and thereby a drain is established on the vital elements of the body. This, by the way, may not sound scientific enough for some of the standing authorities; nevertheless, there is some reason in it, and seemingly, some good results from such practice are not exceptional.

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\*Any man of ordinary intelligence can safely practice this vaccination or inoculation. All that is necessary is good virus and a hypodermic syringe.



A seton is inserted in the following manner: With the left hand pull a flap of skin of the dewlap (or brisket) down as far as possible, then with a sharp knife make a hole through the skin, i. e. from one side until the point of the blade appears on the opposite side of the flap, then insert a two or three inch wide tape or a good sized string in the incision. When a seton is in place it bears the same relation to the skin that a thread passed through a fold of cloth bears to that fold. Knots are made at each end, or the ends are so tied together as to prevent the string from pulling out. A little liquor ammonia or corrosive sublimate on the string or tape will increase suppuration. The seton should be pulled to and fro once or twice a week at least.

As to medicinal treatments, experiments with mercurial preparations, carbolic acid, mineral acids, iron and copper preparations, sulphurated agents, and various antiseptics have failed. I have tried also several "sure cures" and specifics (?) recommended, for the purpose of satisfying the demands of the people and the claims of the manufacturers, but I have failed with all. Pure salt and sulphur, limewater, etc., etc., are, so far as our experience goes, of little if any value as curative medicines. We shall experiment this year with a line of new and untried drugs.

Yet there are cases in which it is desirable to attempt a cure even though chances are much against success. This is particularly true in very valuable animals found ill at an early hour, or in slow, dragging cases. In these I have found the following treatment the most beneficial of all that I have tried, though it is seldom indeed that recovery occurs with even that.

\* Place the animal in a lot, yard or stable, empty the bowels, and activate all the secretions, particularly the urine, in order to favor the expulsion of the poisonous germs and of their products from the body. To attain this object give 10 grains to three drams of calomel mixed in a little oil, say 12 ounces of raw linseed oil or castor oil, every three or four

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\* This for cattle five months to two years old.

hours; and three times a day add ten grains to one dram of powdered nux vomica to this dose. Give early and occasionally thereafter, injections of quarts, and indeed gallons, of warm water in the bowels; follow these medicines in forty-eight hours with one quarter to one pound of epsom salts if the bowels are not already loose. The kidneys may be activated by the use of pulverized nitrate of potash at about teaspoonful doses four times a day. This may be mixed with the above oil emulsion. These combinations of oil, calomel, powdered nux vomica and nitrate of potash are not very scientific, but they are safe enough and they avoid the trouble of frequent dosing, and prevent the worrying of the subjects. Besides that may be given quinine at dram doses, or antipyrine in half these quantities three or four times daily. These are good to counteract the fever. Antipyrine is exceedingly costly, however.

The remedy for the evil is preventive inoculation early. See special article further on this point. If this were practiced by every farmer, almost every animal so protected would resist.

#### BLACK LEG AND CHARBON.

*Differentiation.*—As we occasionally have charbon in this \* State, and as people unacquainted with veterinary science may occasionally confound the two diseases, it is perhaps well to explain the most marked differences.

In the first place, black leg, in the natural course of things is a disease of *young cattle* I may say exclusively, although it be *inoculated* to sheep, rabbits, etc.; and named *Bacterium Chauvei* †. Other names for black leg are symptomatic anthrax, quarter-ill, emphysematous or gaseous anthrax.

Charbon is a disease of horses, mules, cattle, sheep, etc., etc., and even man, It is due to a germ named *bacillus anthracis* which differs radically from the germ of black-leg in its

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\* We have not charbon in Missouri anything like the States of Mississippi, Louisiana and California. It is unfortunate for the people, that in those States, the difference between charbon and black leg have not been laid clearly before them, and have been confounded.

† A scientific term for the germ of black leg is clostridium.

preference in vegetation, etc. Charbon is referred to sometimes simply as anthrax or as essential anthrax, and in man as malignant pustule.

In black leg the *most characteristic* and striking signs are the pronounced gaseous black tumors about the shoulders or hips, limbs, neck, back, etc., etc. The *liver* and *spleen*, with the exception of a discoloration which is often the result of changes after death, are about *unchanged* in their volume and consistency.

In charbon these *pronounced gaseous tumors* are absent, although there are *occasionally* enlargements about the tongue, or throat, particularly when the disease occurs in the horse species. They are nothing to be mistaken for the true black leg tumors, even if such did appear regularly in charbon in cattle, which is not the case. The *liver, spleen* (and some other organs) are *changed* in *volume* and *consistency*; they are gorged with dark, thick blood, just the reverse of livers and spleens in black leg.

Both maladies are preventable by vaccination—black leg by *one* method, discovered and extensively practiced in Europe by Arloing, Thomas and Cornevin; charbon by *another* method, discovered and extensively practiced by Pasteur and his agents.\* Indeed, to the man of science there seems to be more analogy between charbon and septicemia than between charbon and black leg, and the ordinary observer is more apt to be confused when noticing the post mortem appearances of charbon and Texas fever, which present lesions much alike in the liver and spleen.

#### VACCINE AND VACCINATION.

##### (*Protective Virus.*)

There is no more mystery or secret about black leg vaccine than there is about small-pox vaccine. It simply consists of the germ of the disease so weakened by heat or other processes as to cause fever sufficiently high, but not enough to

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\* Both kinds of vaccination are practiced in this country—the virus being prepared by the principle of the discoverers, but by processes by which the germs may be applied safely by anyone, and preserved for an indefinite period.

sicken much, stunt or kill, just as vaccinia is, according to authorities, the germ of horse-pox or cow-pox, which is naturally such as to cause, when inoculated to man, only a mild fever and pustule. But by both inoculations the maladies that they are intended to prevent respectively are in reality guarded against for years.

The germs are obtained from swellings of cases of black leg, are properly weakened by heat at 80 deg. and 85 deg. C., and then worked into convenient form and inoculated twice, each dose about a week apart. The germs heated the most are the weakest and consequently inoculated first; the others are inoculated last. The operation is practiced with an ordinary hypodermic syringe in the tail, in the smooth, hairless portion underneath, from four to six inches from the body. Inoculation anywhere else, particularly where the skin is loose on the body, may occasionally cause local characteristic swellings of black leg, that are detrimental and dangerous to the animal.

The vaccine matter may be made into tablets.

If inoculation is practiced during an outbreak, only the animals showing no signs of the disease should be operated on, right after removing them from whence the disease started. On farms where black leg occurs more or less regularly the most rational and successful way is to inoculate young, say at five or six months of age. The death rate need not be feared much thereafter from black-leg among the protected stock, if good vaccine was used.

The following quotations show some of the tests abroad:

“Mr. Strebel, in the *Canton of Fribourg*, Switzerland, in the spring of 1886, inoculated with *modified* black leg virus 1275 young cattle and left unvaccinated 1829 head. They were on different more or less infectious grounds. Black leg had previously made victims on some of the same pastures. The result was that only one of the vaccinated lot died of the disease, whilst seventy-one of the unvaccinated succumbed. In the districts of *Gruyere* and *Singine* 160 vaccinated and 433 not vaccinated young cattle were placed *together* on infectious pastures. Among the 160 vaccinated beasts only one was attacked by black leg; among the 433 unvaccinated twenty died from it.”

This is only a modest illustration of hundreds of tests in which thousands of cattle were tried.

I give data of some years back, purposely to show the success of protective inoculation from the beginning. The results now are much better still.

The following presents some of our own field tests in 1889:

## PROTECTIVE INOCULATION OF BLACK LEG. (Vaccination).

<i>Date of 1st inoculation.</i>	<i>Date of 2d inoculation.</i>	<i>Number of cattle.</i>	<i>Condition of herd before inoculation.</i>	<i>Condition of herd after inoculation. Results and Remarks.</i>
1889	Oct. 16.	16	{ Outbreak of black-leg among young stock; several dead, { one sick.	{ Stock left on grounds supposed infections; none died except the one that had the disease when vaccinated. The cases have since the freedom of all the infectious grounds and remain healthy where they before perished.
Oct. 25.	Nov. 3.	17	{ Outbreak of black-leg among herd. Two deaths.	{ Not a death after inoculation and the stock roams where death by black-leg caused devastation before.
Nov. 10.	Nov. 17.	10	{ Cattle healthy, but were on grounds presumably infectious.	{ There was no black-leg among these cattle, they are on grounds where in the years previous the disease caused ravages; cattle remain healthy.
Dec. 16.	Dec. 28.	39	{ Outbreak of black-leg. Three or four deaths.	{ Not one death after first vaccination even, and though since the two operations, the animals have been allowed all freedom on infectious soils, not a case occurred.

Thus of 82 head vaccinated at different dates in different localities where the disease actually existed and on grounds which had furnished the virus and had caused death, only one died, and that was actually suffering from black leg when inoculated.

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### IMMUNITY AGAINST BLACK LEG.

The principle by which this disease is prevented by inoculation or vaccination is not more clearly understood than it is in other affections so prevented. The foreign experiments and studies, confirmed by ours, point to the fact that calves that contract the disease never again become seriously ill from it, and that those inoculated purposely likewise remain free from it thereafter. This may explain why, as Arloing has thought, the young stock *particularly* succumb from it, and adult cattle do not suffer; it is probably because these *did* suffer from a mild attack *when young* and thereby they became proof. It has been pretty well established that old cattle in good condition, that have never grazed or been exposed outside where there is liability to receive the germs of black leg, can be inoculated almost as well as young cattle, because they never had become proof by a natural case, mild or serious. On this proposition, we are still experimenting with a view to render the prevention of black leg as cheap as possible. It is now practicable by any one.

The intelligent farmer and stockman may apply it himself.

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### SUPPURATIVE KERATITIS.

By G. E. GRIFFIN, D.V.S., U. S. Army.

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It is simply astonishing the number of animals—horses especially—one observes suffering from this disease, and still more astonishing are the number of animals who lose the sight of one or both eyes from the neglect or maltreatment of these cases.

It has always been the impression of the writer that ophthalmology, so far as our domestic animals are concerned, has been very much neglected, with the results that very many—too many indeed—of our patients are condemned to long suffering and comparative uselessness.

It is a well-known fact that in many of the veterinary schools the subject of ophthalmology does not receive the attention it deserves, thus leaving the student to hunt the sub-

ject up for himself if he has time, and as a consequence the eye, its minute anatomy and in fact, often its comparatively common diseases, remain a mystery to a very large number of veterinarians. Veterinary literature is not very rich in works on ophthalmology, so the only resource left us is works on human ophthalmology and their application to our patients.

We shall briefly define suppurative keratitis to be an abscess or breaking down of the cornea or an abscess of the anterior chambers of the eye (this latter is sometimes known as hypopyon keratitis) and ulcer of the cornea, and may be produced with or apparently without inflammation.

The causes are a result or complication of lesions inflammatory of adjoining tissues, innutrition of cornea, but mostly from trauma, whip lashes, clubs, stones, pushing the finger into the eye, etc.; while in the human those of a scrofulous nature are particularly subject to it.

There are two varieties of this disease, the most common being the inflammatory, which is characterized by the existence of inflammatory symptoms; and the non-inflammatory or indolent, in which the substance of the cornea has a tendency to break down and slough without acute symptoms. Either variety may be circumscribed or diffuse.

In the inflammatory variety the symptoms are intense photophobia and profuse lachrymation, while the non-inflammatory type may be entirely free from these symptoms.

The diffuse yellowish cast appearing during inflammation of the cornea is the proof of the formation and infiltration of pus. If the breaking down of the corneal tissues does not concentrate itself at any circumscribed spot, there is a general weakening of the whole substance, until intraocular pressure produces a staphylomatous bulging forward in addition to the already existing opacity.

When a point or patch of suppuration is differentiated, we have an interstitial abscess which may break into an ulcer superficially or may empty itself backward, or possibly even both ways, forming thus a fistulous opening.

In abscesses of the chambers, the purulent matter is mixed with the aqueous humor, which it renders turbid and is de-

posited at the lower part of the eye, forming behind the cornea a kind of whitish crescent that rises more or less in front of the pupil. Sometimes an accumulation of pus in the anterior chamber is difficult to distinguish from a condition of the cornea known as onyx, which is a collection of pus between the lamellæ of the cornea, but by means of oblique illumination we can generally locate the deposit.

As regards treatment the writer has found that when inflammatory symptoms are present a solution of atrophia sulphate, four grains to one ounce of distilled water, should be dropped in the eye or eyes freely several times daily for its soothing effect and as a preventative of iritic adhesion by contracting the iris. Astringent and antiseptic lotions are useful, the organ should be carefully and securely bandaged to exclude light and secure rest and the following formula used every morning.

℞	Acidi borici,	Gr. xii.
	Aquæ menthæ piperitœ,	ʒ i
	Vini opii,	ʒ ii.
	Aquæ Camphoræ,	} aa ʒ ii.
	Aquæ distillate,	
	Hydrargyri bichloridi,	Gr. $\frac{1}{30}$ .

Indolent ulcers should be aroused to a certain inflammatory activity by stimulation, by means of a nitrate silver pencil with calomel insufflations; of course the general health of the patient should be attended to as well as the sanitation. Corneal ulcers, whether deep or superficial, seldom require operative treatment in our patients, but should perforation threaten paracentesis should be done at once and relief from severe pain thus gained. This operation should also be done when a diagnosis of pus in the anterior chamber is made and when, after waiting a certain time for its absorption, it fails to disappear.

Paracentesis of the anterior chamber has been done by the writer in the following manner: A small scalpel, speculum, forceps and small spatula, together with some absorbent cotton, bandages, sponges, syringe, etc., having been placed con-



veniently, an instillation of atropia is made to dilate the pupil, thus preventing as much as possible the danger of anterior synechia. The pupil being well dilated anæsthetize the cornea by an application of cocaine, secure the patient by means of the twitch, or if very nervous cast; adjust the speculum, firmly seize the conjunctiva inferiorly with the forceps and hold it down, exposing part of the inferior portion of the sclerotic; the small scalpel is now introduced at the cornea—scleral margin inferiorly—in a perpendicular direction, thus piercing, not splitting, the cornea. When the point of the scalpel has passed the substance of the cornea, the blade is turned parallel with the iris and pushed forward in front of same till an opening of the desired size is made. If in the outrush of aqueous the iris should happen to be swept into the wound, it must be replaced by the spatula and instillation of eserine made. The absorbent cotton and bandages should now be applied and the patient placed in a dark box if possible. Light food and scrupulous cleanliness are absolutely necessary.

Staphyloma of the cornea is very often produced by a perforating ulcer. Its only treatment is by operation as above.

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## EXTRACTS FROM FOREIGN JOURNALS.

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### ACTINOMYCOSIS IN THE PHARYNX.

By MR. GUINARD.

A cow in bad condition which was killed in a slaughter house, had presented a swelling in both parotid regions, and in the inter-maxillary space. This, when afterwards dissected, showed that the connective tissue of the parotid region, the postero-superior part of the inter-maxillary space, and the pharynx itself, were surrounded by or changed into a lardaceous, yellowish tissue, through which there were several purulent sacs. The pharynx was ulcerated in the postero-superior part, the edges of the ulceration protruding into the pharyngeal cavity. A communication existed between the pharynx and the deep abscesses of the tumor. The caseous, yellowish suppuration contained numerous colonies of actinomycosis.—*Ann. of Vet. Med. and Zoot.*

## TREATMENT OF SEROUS CYSTS.

By MR. CHOBAUD.

These soft tumors may be observed in every region of the body, but are most frequently found at the elbow, (caped elbow), at the hock, (caped hock), on the anterior face of the fetlock, of the knee, on the internal face of the cannon, on the back, the loins, the withers and the hips. The methods of treating them are quite various and numerous, comprising douches, friction, massing, puncture, pressure, setons, cauterization, iodine injections, electro-puncture, etc. Sometimes the treatment is successful and at others it proves very unsatisfactory. As the successful result of twenty-five cases treated by him, the author recommends the following measures, as constituting a rational treatment which has the important advantage of shortening the period of the detention of the animal from his work, twenty days only being required for the course. The first indication is to puncture the cyst in the most dependent part, to empty it of its contents, and then to fill it with oakum moistened with a concentrated alcoholic solution of bichloride of mercury, (1 part in 25). The oakum is left in for from twenty-four to forty-eight hours, and then pulled away. An acute inflammation in the walls of the cyst soon follows, which is itself followed by their adhesion and rapid cicatrization.—*Repert. Vet. San. Police.*

## ACCIDENT FOLLOWING THE CASTRATION OF CRYPTORCHID.

By PROFESSOR THOMASSEN.

A horse affected with double cryptorchidy had been operated upon by the method employed by Professor Degive. Ten days after the operation and while the general condition of the patient seemed quite satisfactory, general symptoms were manifested. The patient had a high fever and made violent expulsive efforts, which were accompanied by the dropping of a few balls of manure. The exploration of the rectum showed an incomplete obliteration of the entrance of the pelvis, by a largely tympanized portion of the large in-

testine. The intestinal mass was reduced by the taxis, but then it was found that adhesions with the abdominal walls existed at the point where the peritoneum had been torn during the first operation, having been lacerated by the hand introduced in the rectum. From this day the patient grew worse, acute peritonitis followed, and the animal died a few days afterwards. It was found at the post mortem that the large colon at its pelvic curvature, and a portion of the small intestines were adherent to the abdominal walls at the pelvic entrance on the left side, and that an abscess existed on a level with the adherent portions. The author thinks that death was caused by the rectal manipulation made to relieve the adhesions, and that if the abscess had been left alone it would most probably have evacuated through the inguinal tract, and thus the peritonitis, instead of becoming general and fatal, would have remained local and in all probability harmless.—*Annales de Belg.*

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#### FATAL HEMORRHAGE DUE TO A NAIL.

By MR. DAIGNET.

A six-year-old mare was suddenly taken with colic, which soon disappeared, and having been placed in a box stall, she laid down and died several hours after without exhibiting the slightest symptom indicating the approach of her sudden ending. At the autopsy the stomach was found four times its normal size and filled with clotted, together with a small quantity of liquid, blood. This fluid was also found in a small portion of the small intestines, about five or six yards in length; it was all mixed with mucosities. The large colon and the cœcum were distended with a mass of food, hard and dry. The œsophagus, at about the middle of the thoracic portion, had a wound about one-quarter of an inch long, concealed by a dark infiltration through the surrounding connective tissue. This wound was connected with the posterior aorta, which presented also, at that point, a wound with irregular edges, and measuring about one inch in length. Death was due to an aortic hemorrhage. The cause of it was found

in the mass of the bloody clots of the stomach in the form of a nail about three inches long, bent in the middle at about a right angle.—*Repert. Vet. San. Police.*

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### FRACTURE OF THE LARGE SESAMOIDS.

By MR. SCHONECK.

During exercise on ice, while being driven at rapid trot, a mare stumbled suddenly and so severely that she was with great difficulty prevented from falling, and on recovering her feet she was found to be lame on both fore legs, to such an extent as to be quite unable to move a single step. She presented the following symptoms: The posterior legs were carried well under the body; on the left fore leg the fetlock had dropped down to such extent that the coronet formed a right angle with the cannon; both fetlocks were swollen and very painful, principally on the back; on the left side under the skin, a small piece of loose bone was detected; the perforatus tendon was relaxed and painful to the touch; the perforans and the suspensory ligaments were intact. A diagnosis of fracture of the sesamoids was confirmed at the post mortem, the animal being immediately destroyed.—*Berlin Thier Wochen.*

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### EXTIRPATION OF THE OCULAR GLOBE.

By MR. W. C. SHIMMEL.

In cases of exophthalmia in dogs, the globe of the eye sometimes assumes enormous proportions, either because of having been directly injured by the traumatic cause or under the simple influence of other surrounding irritating causes. In these cases reduction becomes impossible, and the only remedy is the removal of the globe. The author remarks that the complete extirpation of the eye is liable to the objection of leaving a large vacuum in the orbit, which is accompanied by a well marked and homely looking dropping of the lids. To obviate this, he preserves the posterior part of the capsule, removing only the anterior portion of the sclerotic. This simple operation is never complicated with sympathetic

ophthalmia, and the wound being dressed antiseptically heals in a few days. The eyelids drop a great deal less than when the complete amputation is performed.—*Æsterreich Mon. f. Thierh.*

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#### GRADED REVULSION IN THE TREATMENT OF HYDROTHORAX.

By MR. MINETTE.

This is a form of treatment recommended in the *Journal of Zootechnie* by Mr. Brunet and which was tested by the author. The treatment, besides the ordinary internal administration of diuretics, consists in the application of vesicating agents on the sides of the chest, covering the parts by degrees, adding a supplement of blisters, so as to cover a greater surface day by day, until nearly the entire thoracic surface is covered. In the case reported by Mr. Minette the symptoms of hydrothorax were well marked and had existed for several weeks. The treatment lasted a few days and was followed by complete recovery.—*Recueil de Med. Vet.*

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#### RECTAL OBSTRUCTION.

By MR. DETROYE.

[The seasonableness of the paper of Mr. Phillips, which we publish in another part of this issue, is well illustrated by the case reported by Mr. Detroye.—ED. REVIEW]. An aged horse had lost his appetite for three days, and having some colicky pains the author was called to visit him. He found him with the following symptoms: Facies normal, respiration accelerated, pulse 90, loins stiff, micturation frequent in small quantity, urine thick, abdomen slightly tympanitic, flank hard. No pain on pressure on the abdomen, percussion at the flanks giving but little resonance, auscultation of the left side giving hearing of fine and reported crepitating sounds, and on the right slight metallic noises, quite regular. Movement of the bowels almost stopped. A diagnosis of intestinal obstruction is made, and the animal submitted to severe cathartic treatment, notwithstanding which he dies four days after. At the post mortem extensive peritonitis was found, and the small

colon was filled with a large excremental mass composed of hay and undigested oats, the grains of oats being implanted on the surface in such a way that many of them had run entirely through the mucous membrane and partly through the muscular coat. Amongst the conclusions of the author he adds: "One must never neglect the rectal exploration in case of intestinal obstruction or even of simple indigestion. Had it been done in this case, no doubt the patient would have been saved.—*Recueil de Med. Vet.*

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## BIBLIOGRAPHY.

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ANIMAL PARASITES OF SHEEP. By Dr. Cooper Curtice, D.V.M.  
Bureau of Animal Industry, Washington, D. C.

The Department of Agriculture in Washington has for some time been considering the propriety of issuing a number of works on veterinary subjects, and through the Bureau of Animal Industry the first book has been recently issued, treating a very important and interesting subject, that of Animal Parasites of Sheep. To Dr. C. Curtice, and we understand Dr. Salmon, the profession is indebted for this valuable addition to our American veterinary literature.

This excellent book forms a volume of a little over 200 pages, printed and bound in the *usual form of publications* issued from the Department of Agriculture and is illustrated by thirty-six excellent plates, showing the anatomy of most of the parasites and illustrating the location of their habitats and the appearance of the organs where they are found.

Beginning by a few general remarks as to the diagnosis of parasitic diseases, etiology, development of the parasites and treatment, the author at once enters into the main part of the subject and successively presents to the reader the special parasites of the nose, those of the skin, of diverse organs, those of the alimentary canal and its appendages, the subject of parasites of the lungs terminating the work.

Animal Parasites of Sheep is an excellent work, arranged with symmetry and carefully systematic throughout, taking

the history of every parasite of sheep in a thorough manner, and giving to the reader a description of each individual, his life, occurrence and the diseased process to which each gives rise, with the treatment appropriate to each, as far as possible. We feel confident that as a book of reference or as one of general inquiry and study it will prove a most valuable acquisition to all students of that special part of helminthology—a science which is probably too often neglected by the veterinarian and which we fear is too much ignored in our veterinary colleges.

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## CORRESPONDENCE.

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### GRADUATES AND NON-GRADUATES.

CEDARBURG, WIS., Aug. 5, 1890.

*Editor of Review* :—In pursuing the late articles on this subject by your Iowa and Illinois correspondents, we Wisconsin boys are brought in an adnubilate dilemma regarding graduates and non-graduates in these two States. If both articles are strictly correct, then I cannot see the possible reason why the fifteen or twenty new graduates who annually locate in the State of Illinois in the great majority of cases soon obtain permanent, well-paying practices, and soon make many of the old-fashioned “horse-doctors” hunt for some other employment in case they have a family to support. This is a fact well known to graduates or non-graduates.

On the other hand I cannot comprehend why these Iowa “butchers,” under the described circumstances, are not obliged to go the same way that Mr. Quack is going in Illinois.

Evidently both correspondents go to the extremes in choosing their weapons of attack and defense against each other—one advocating and urging, and the other denouncing and condemning veterinary legislation.

Here several questions arise, namely—Who is qualified to practice and who is not? Why and by whom is legislation called for, and why do the *non-graduates* so bitterly oppose it?

Is the desired legislation not intended as promulgatory to our profession by prohibiting all but *qualified* men to practice, or is it only urged by the graduates to assist them in eradicating quackery?

To answer these questions thoroughly would occupy too much time and space.

The proposed legislation is certainly not intended to exclude from the profession all but graduates, for this would be certainly a mistake. But all we *want* and *will* and *must* accomplish is the eradicating and extinction of "quacks and quackery."

I draw a distinction between non-graduates and quacks, for I positively know that there are some competent, diligent, hard-working, honest non-graduates in existence who, through careful observation, long and tireless studying, at home and in the sick stall, have succeeded in gathering a knowledge so close to perfection as to make many a graduate blush.

Observe such a practitioner in administering drugs to a sick animal and ask him about the drug he is using, and you will be surprised to hear with what accuracy and enthusiasm he describes its physiological actions in a common language—the Latin, of course, he don't understand, for he was never fortunate enough to obtain a college education. He is self-made, his knowledge and ability are founded on observation, patient studying and long experience, and he deserves to be ranked amongst his more fortunate professionals. He is no disgrace to the profession. The success in any business not only depends on a theoretical knowledge of the same, but chiefly upon the practical ability; and such is emphatically the case in our profession.

The genuine veterinarian is not made but born, and it is only *him* in whose veins horseman's blood flows from infancy, and whose love and inclination to his profession is a gift of nature, who will make horsemanship a success. College education is secondary.

But there is one kind of competitors who throw disgrace



upon our profession, and they are the "adolescents" described by your Illinois correspondent.

A non-graduate or quack, no matter how ignorant or brutal, will never materially influence or degrade our profession, for the intelligent public will recognize and duly respect the humble graduate, knowing and comprehending the necessity of a thorough college education. When, however, one of these brainless, high-toned, kid-glove adolescents, with Latin diploma, who is justly expected to understand his business, steps forth in all his imaginary majesty and commences imposition on the people, then and there, I say, the horse-whip ought to be applied. Fortunately, however, these are very scarce and their career is of only short duration, for after their surplus cash is exhausted they drop off to be never heard of again. To provide against these I see no remedy. Our veterinary colleges cannot avoid them by adopting more strict examinations, for as a rule they are able to pass them, nor can we exclude them through legislation by also causing graduates to pass examinations.

To derive our point in view, however, it is certainly essential that all who have not qualified should pass an examination before they can obtain the rights and title of a veterinary surgeon.

Here the proposed legislation offers to legally recognize and protect the qualified non-graduate, and confer on them all the rights, powers and privileges of the regular graduate, and there is still that tremendous howling.

Under these circumstances I see no earthly reason why the qualified non-graduates should not assist the graduates in their work in procuring the proposed legislation, which they certainly will do. Now then, who does the howling? What class is it who continually denounce and condemn graduates and legislation through the columns of *THE REVIEW*? Most certainly they are those who know that the legislation will terminate their career—the non-qualified—the quacks and nobody else.

J. J. KRAUS, D.V.S.

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EXTRA.

AMERICAN VETERINARY REVIEW,

OCTOBER, 1890.

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United States Veterinary Medical Association.

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EDITORIAL.

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On Sunday morning, September 14th, 1890, we left New York, accompanied by the contingent of veterinarian brethren who have hitherto constituted the nucleus of the United States Veterinary Medical Association—gathered mostly from the East—with our faces turned westward. Our objective point was Chicago, and our purpose was to attend the twenty-seventh anniversary meeting of the Association, which had been appointed to be held in that city. Making something of a detour from the more direct route, for the purpose of a brief stay in each of our sister cities of Philadelphia, Baltimore and Washington, and augmenting our force in the last named city by a number of new recruits, we sped onward until we reached Cincinnati. Here a longer halt was ordered, and deviating from our direct road, we made a visit to Lexington, Ky., where, in pursuance of arrangements made by Dr. Kidd, we were gratified by a visit to two of the best breeding establishments of that vicinity. Returning to Cincinnati, we resumed our journey in our special car, and after a *very gay, if not*

*a very restful night*, reached the great city where for the two following days we were to attend the meeting which was to consummate the consolidation of the United States Veterinary Medical Association, or, to quote the very expressive words of Dr. Williams, "to witness the birthday of the TRUE National Association of the United States."

The meeting, which was hurriedly reported in our last number, was characterized by a pervading harmony, and a general and genuine feeling of friendliness throughout, with practically, AGREEMENT AND CO-OPERATION for its motto and pass-word. The discussions of the scientific questions which were in order were instructive and able, and the serious work of the occasion was faithfully attended to, though intermixed now and then with social relaxation and intervals of rest, and pleasant visits and drives through and about the great metropolis of the West, the whole being, at length, fitly crowned by one of the nicest entertainments ever enjoyed by the members of the profession and of the Association. And then came the final "*Au revoir*" with the inevitable hour of separation. The meeting was over; long distances separated us from our homes; an editor's duty to his friends and readers began to urge itself upon us with a voice which could not be silenced. While in Chicago we had mentally formulated a plan of arrangement for our work, or at least thought we had done so, and flattered ourselves that our ideas required nothing more than the labor of putting them in type against our regular time to put the REVIEW to press. But where is the editor that can depend upon making all the joints of his time fit together in the execution of the purposes he has formed?

Lots of papers were read, and a large amount of labor was performed at the meeting, and the reports of the committees being lengthy, and the stenographers more or less embarrassed by technicalities with which they were unfamiliar, the reporters' work was rather tardily performed, and much time was consequently consumed in necessary corrections and emendations, the material for our work thus failing to come to time, causing, altogether, not a little anxiety and embarrassment on our part; and as if there were not enough in all these obstacle to worry our

patience, traveling misfortunes must be added to the list, our worthy Secretary having missed his "impedimenta," to wit, his bag and baggage, containing a large number of Association documents, which, however, turned up at last in New York instead of Philadelphia, their proper destination, and then appearing in a most dilapidated condition, the valise having been broken open and the papers more or less roughly handled or mixed confusedly together. But notwithstanding all, some record of the meeting must needs be forthcoming, though under the circumstances it could be little more than the simplest notice. But the meeting had been of too interesting and important a character to be thus cavalierly treated, and as the time had long passed after our regular day to go to press, the alternative presented itself of missing the date of our regular publication, or of neglecting our obligations to the friends and supporters of the REVIEW. We have, therefore, decided to do that which we thought would fulfill all our obligations. Our October number appeared upon the *regular* day of publication—and by the way, it was a good number—and to-day we offer to our friends, to our veterinary *confrères*, and to our colleagues in the Association, this *extra number* of the AMERICAN VETERINARY REVIEW, with as thorough and complete a *compte rendu* of the meeting as our position has enabled us to obtain. If our subscribers have waited a few days for this, they have nevertheless not lost their *regular monthly visitor*. We trust that our apology for the tardiness of the appearance of the report will be satisfactory to our friends.

TWENTY-SEVENTH ANNUAL MEETING  
OF THE  
UNITED STATES VETERINARY MEDICAL ASSOCIATION.

AUDITORIUM RECITAL HALL, CHICAGO,

Sept. 16th and 17th, 1890.

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FIRST DAY.

The Comitia Minora spent the morning session of September 16th in an executive meeting.

The second session was called to order at 3 o'clock P.M., by President Michener.

The following named members responded to roll-call by the Secretary, Dr. W. Horace Hoskins.

Drs. Adair, Atkinson, Barrow, Butler, T. S., Clement, Crowley, Crego, Dougherty, Wm., Evers, Faust, Faville, Hoskins, Howe, Huidekoper, Lemay, Liautard, Lyford, McLean, R. A., Marshall, Meyer, J. C., Sr., Meyer, J. C., Jr., Michener, Paquin, Rayner, Jas. B., Rayner, Thos. B., Robertson, Jas. L., Salmon, Trumbower, Turner, Weber, Winchester and Zuill.

Those not members of the Association but present were: Drs. Rectennold, Schrieber and Folker, of Penn.; Griffin, of the Indian Territory; Thompson, of Indiana; W. B. Wallace, of Ohio; Armstrong, Williams, A. H. Baker, S. S. Baker, Ryan, Sayre, C. E. Hughes, Withers, Walker, Casewell, Hollingsworth, J. A. Borette, L. A. Merrilat, A. C. Merrilat, Story, Campbell, Mosher, Stringer, Streets, of Illinois; S. Stewart, Kennedy, Edwards, of Iowa; W. J. Stewart, Prof. Periam, of Ill.; S. C. Whitney, of Mich.; C. A. Carey, of South Dakota; Kidd, of Lexington, Ky.; T. E. White, A. Ronif, Jno. S. Myers, H. B. Piatt, of Missouri; J. M. Phillips, of Kansas; Wm. Shaw, Otto Faust, of Ohio; J. Hawkins and S. Brenton, of Mich.; Olaf Schwartzkopf, of Minn.; Roberts, E. M. Barnes, Watson, of Wis.; D. W. Menhennitt, W. J. Stewart, Mich.; T. Wrigglesworth, Wis.; J. S. Butler,

Daniels, of Ohio ; J. C. Whitney, Hillsdale, Mich.; J. M. Curphey, Sayre, Roe, of Ind.; J. H. Hope, Ill.; Prof. Periam, of Chicago Veterinary College; Albert Dean, of Mo.

The President introduced Dr. W. L. Williams, of Bloomington, Ill., who delivered an address of welcome and spoke as follows:

#### ADDRESS OF WELCOME BY DR. WILLIAMS.

When we invited and urged you to convene this meeting here, our message bore an inferential promise of a hearty welcome, which it now becomes our pleasant duty to endeavor to fulfill.

In a formal invitation it is scarcely possible to convey to a desired guest the full measure of the welcome which awaits him, nor to advise him wholly of the many reasons why a visit would be gratefully enjoyed, and so social custom has long decreed that an invitation be brief, and that many of the essential reasons for bidding the guest come, and for according a hearty greeting, should remain unexpressed until he has arrived at the house of the host, who, surrounded by the inspiring influences of home, may all the more fitly give voice to his thoughts.

So ere you enter upon the duties for which you have come in our midst, we would invite you to pause and briefly consider a part of the reasons why we extend to you a most hearty welcome, with the hope that they may gladden and cheer your labors.

Were it my duty to welcome you specially to Illinois, the State of my birth, the scene of my efforts as a student and veterinarian, there would certainly be no lack of suitable reasons, with our vast live stock interests, the first in value of any State in the Union, the long list of serious contagious diseases which exist or have existed in our midst, their economic and sanitary importance, and the resulting large body of young veterinarians, greater in number than in any other Western State, who have every reason for heartily greeting you here for the good which may come to ourselves by commingling with you.

It is not, however, to Illinois, but to the West and Northwest that we bid you welcome; to the live stock producing area of the nation, and one of the most important live stock regions of the world. You now visit for the first time the source of live stock supplies not alone to the nation, but to no small extent to several foreign countries.

Our meat producing animals are rarely equalled, never surpassed in any land for quality and richness, and our quantity is sufficiently great so that, after supplying the wants of the nation, we still have an enormous supply of meat and dairy products for exportation. We breed and supply to home and foreign markets a vast number of horses, among which are the speediest pacers and trotters, and as fleet thoroughbreds, and as powerful draft horses, as are to be found in the world.

In building this comparatively recent live stock interest, every valued breed of every land has been drawn upon for its choicest individuals, and yet

we have, numbers and value considered, the healthiest live stock population in the world.

This being the fountain head from which the nation's live stock supplies are to be drawn, the freedom of this area from serious diseases has an inestimable value from a monetary and sanitary standpoint, and directly influences the health and wealth of the nation.

To no one can these questions prove of more direct interest than to our profession, and especially to your society which, as now constituted, is largely made up of veterinarians representing that part of the country which consumes a large part of our live stock products.

There must be a strong reciprocal interest between the older and better organized profession of the East, and the younger and now numerically equal body of Western veterinarians. Although the growth of our profession throughout the country has been rapid, almost beyond belief, you are now for the first time in the midst of the most phenomenal part of the entire body which, practically the creation of the past decade, has within ten years increased by nearly or quite 1500 per cent., a growth heretofore unequalled in any profession in any land at any age.

This young, rapidly grown, and to some extent poorly equipped veterinary profession must in the future be to a great extent the guardian of the health and worth of this vast animal population, among which widespread and fatal disease would mean financial ruin to those engaged in breeding and rearing live stock, would cripple one of our important sources of national wealth, and through those diseases communicable from animal to man, or those which render the flesh of affected animals unfit for human food, would jeopardize the health of the whole people.

Recently we were astonished and alarmed to find that a serious outbreak of pleuro-pneumonia existed in this city, from which great numbers of live cattle are shipped not only to all parts of the nation, but to many foreign countries. As this insidious and destructive disease could not be tolerated here, the State at once took measures to suppress and eradicate it, and the nation in due regard to its interests relaxed for a time its work with other infected areas of importance, and heartily joined the State in the prompt and now apparently effectual eradication of the disease at this peculiarly vulnerable point.

So when, in 1887, equine syphilis was reported as existing to a serious extent for the first time in any English speaking country, in one of our principal horse-breeding centers from which we annually export large numbers of valuable breeding animals to every part of the nation, there was a demand and necessity that it be controlled and extirpated, and as a result it has not been seen or heard from since in that section.

In this region during the past few years the cattle have suffered more extensively from actinomycosis than perhaps in any other country, and the State Board of Live Stock Commissioners of Illinois having recently taken the stand that the flesh of animals so affected is unfit for and dangerous as human food, we will soon witness in our courts one of the hardest fought legal battles in the history of veterinary sanitary science, one which will probably be quoted in the future as a precedent in dealing with this disease.



We young veterinarians, with these vast responsibilities awaiting us, are now afforded the first opportunity of socially intermingling with many of the oldest and most favorably known veterinarians in America, which, with the pleasure of meeting again many of those with whom we parted when leaving college, will amply repay us for laying aside for a few days our routine of every day life.

We are offered for the first time an opportunity to listen to and profit by a series of papers representing the best thoughts of the oldest and best known section of our profession.

You are more cordially welcome, however, because you now offer us fellowship in your society in a practicable, available, desirable manner, in a way by which we hope to be able in the near future to repay you by adding numbers and interest to this society.

College selfishness, foibles, likes and dislikes, have been partly blunted and overcome by our State societies, but their influence being limited by the boundaries of States, we have come to desire and fully realize the need of a central organization about which to rally, a body which we may look upon as representing our highest ideals of thought and professional conduct. We are grateful to be now offered an opportunity to sit with you in council, to become a part of your organization.

Comprising the numerical half of our profession in the United States, it will be conceded that we should constitute a part of a national organization, and we are glad that there is every promise that we will to-day, in proportion to our age and ability, assume a due proportion of the labor and responsibilities of the United States Veterinary Medical Association, and contribute what we can to round out its national character, that it may henceforth be viewed, not as a society of the Atlantic States, but as one representing the best elements and thought of the veterinary profession of the nation.

This meeting seems to bear with it an unexpressed covenant that your conventions in the future are not to be kept within the former narrow limits, but are to be confined only by the national boundary lines. What a change from the past when we may journey happily together across the Mississippi, over the Missouri, beyond the Rocky Mountains, and convene a far larger assembly than this amid the orange groves on the shores of the Pacific. Such a consummation can scarcely be called visionary when we remember the rapid development and growth our profession is undergoing, and until this or other Association shall cover this entire territory, and include as members a fair proportion of the veterinarians of every section, we cannot be said to possess a truly national veterinary society.

We look upon this meeting as marking the beginning of a revolution in your organization—a revolution which it is hoped will bear you and with you our whole profession a long step forward.

To-day you have convened this meeting doubly as far from the Atlantic coast as in any previous case; you will probably vote upon the longest list of applicants for membership ever presented at one time, look upon more new faces than ever before, and propose to make an important and sweeping change in your manner of admitting members.

You open your doors rather abruptly to a large company of strangers, mostly very young veterinarians, with limited experience in Veterinary Associa-

tions, thus offering to exchange important responsibilities with Western veterinarians.

Heretofore the few members which you held in the West have apparently laid you under no responsibilities to this vast section, and in counting your effective forces or your liabilities or duties, we have never figured as an essential factor, nor have we as Western veterinarians ever felt that the character of your society, its objects or aims, its virtues or shortcomings, its joys or trials, were of any concern to us.

Henceforth we are to mutually share its duties and benefits, its trials and triumphs, its responsibilities and pleasures. Western veterinarians are ready and anxious to take their proper place in your society as a part of a national organization, and meet you in fair numbers to-day to consummate this union. You, perhaps, wished to see more present and certainly it would have pleased us, but after all, like new recruits to an army, before such accessions can prove a help and strength to this society, they must learn how and what to do, they must be organized and trained, their forces concentrated and all thoroughly amalgamated, so perhaps, the not very heavy attendance may bode no ill to you. We hope, however, that those offered may rapidly train into able and willing workers, ever ready to advance the Association towards its highest ideal, and through it to be of value to our whole profession.

From these new members we trust you will succeed in selecting able and willing representatives in every Western State, who will in the future see that the interests of the society shall no longer suffer from neglect, and that we shall, hereafter, furnish our due proportion of members, labor and thought.

When, however, you have secured ample membership in the West, have become intimately acquainted with a large part of our Western veterinarians, have procured among us sufficient competent representatives to look closely after the general work of the society, have all your members under thorough discipline and have held large and well attended meetings in every section of the whole country, you may yet fall short of the highest state of honor and usefulness of such an Association.

We have already mentioned the phenomenal development of the veterinary profession in the West within the past ten years, from a few scattered representatives, mostly foreign born, to more than one thousand regularly qualified veterinarians.

Above and beyond all other reasons we welcome you here in the hope that your presence among us and our amalgamation with you will inspire the mass of this young and rapidly growing part of our profession to higher thought, to deeper study, to rapid, firm, enduring progress.

The outlook here for earnest, competent veterinarians, grows brighter and brighter every day. The general public is rapidly realizing his worth from an economic and humanitarian standpoint in the management of ordinary everyday accidents and ailments, and the State and nation are rapidly discovering the value and need of our profession from a national economic and sanitary view in controlling and eradicating those contagious diseases of animals which so often ruin the owner and cripple the finances of the community, or through other diseases which in addition render the flesh of affected animals unfit for or danger-

ous as human food, or in that long list of diseases which are transmissible through the flesh or through contact from animal to man, usually of a very serious and deadly character.

The social standing, the emoluments, the honors to the competent veterinarian, must advance higher and higher at a rapid pace, while the incompetent, listless practitioner must find his room becoming more and more pinched and unsatisfactory.

We have at present in America but few prominent veterinarians who are really accomplishing something to elevate our profession, so few that they can be counted almost in a moment. Let them work as hard as they may, they can accomplish little towards placing our profession on a level with other learned professions in this country, or with the veterinary profession in many other lands.

We hopefully look to your society as the vital force, and to this day as the birthday, which shall place a whole army of earnest veterinarians in this wide field for observation, research and thought, who, pressing forward harmoniously as one man, may yet during the lives of most of us place our profession on an equality with the veterinary or other scientific profession in any land.

More strongly than any words we can command, we hope you will find in the cordial greetings of my Western colleagues, in their earnest, respectful attention to your deliberations, in their willingness and anxiety to make your stay among us as pleasant as is possible with our imperfect hurried preparations, so cordial and hearty a welcome that you will remember this meeting, the West and Western veterinarians only with pleasure, and will find therein an irresistible invitation to come among us again at an early day.

President Michener responded to the address of welcome on behalf of the Association, as follows :

*Gentlemen of the Association, and particularly of the West:*

There is a great difference between responding to an ordinary speech of welcome, and such an one as has been tendered us by Dr. Williams, and I fear that I cannot fully voice the appreciation of my associates from the East.

Dr. Williams has said so much and has uttered it so sincerely that we would be ungrateful indeed and unmindful of a pleasant duty if we failed to thank you one and all for our reception. We have some of us seen for the first time what is to us the great West, and I feel constrained to plagiarize a prominent man, and repeat that verily had Adam and Eve been placed in this section of our country when expelled from the Garden of Eden, they would have raised their eyes reverently to Heaven and thanked God for the change.

Dr. Williams has given us a good idea of the extensive field for veterinarians in the West. If I can see aright it is in the West that we are to look for our greatest progress. It is here that disease exists upon a scale—diseases that we do not see at all or but seldom in the East, but which you in the West have successfully met. We may arrogantly assume, that as of old, the wise men are in the East, but I must insist that the veterinary profession is an exception and that our brightest, most enterprising men are not content to remain within the narrow

confines offered by our Eastern States. Greatness requires room and it is here obtained.

State universities of the West offer better inducements and more aid than do those of the East, as is evidenced by the veterinary departments of some Western States that compare most favorably with our exclusively veterinary colleges of the East. Let me cite an example of what the West does for its veterinarians by simply calling attention to our friend, Dr. Paquin. Who east of the Alleghenies has done so much? If indeed we except Dr. Salmon, who of us has accomplished any original work.

Perhaps I should have said that to-day we place the corner stone—the foundation of our Association has been building since June, 1863. That the Association has not grown faster is due to the fact of the few artisans employed. With united, harmonious and well-directed work, our building should be completed, its happiest aims achieved and much and lasting good done the profession.

We will now receive the report of the Secretary, who will read the minutes of the last meeting.

Secretary Hoskins read the minutes of the Twenty-sixth Annual Meeting of the Association, as also the minutes of the meeting of the Comitia Minora held at that time. All of which were approved as read.

There being no unfinished business, the President called upon the Secretary to read the minutes of the meeting of the Comitia Minora held September 16, 1890, in the morning.

#### REPORT OF THE COMITA MINORA.

The Comitia Minora of the United States Veterinary Medical Association, was called to order by the President, Dr. Charles B. Michener, at 10:30 A.M.

Members present—Drs. Michener, Hoskins, R. A. McLean, Clement, Huidekoper and Robertson.

Absent—Drs. Wray, Stickney, and Gill.

By appointment—Drs. Lyford, Paquin, and T. Butler.

After reading of minutes, the question of employment of stenographer for the meeting was discussed, and finally it was agreed to employ one at \$10.00 per day, and 50 cts per page of type-written copy of the Proceedings, the expense to be equally divided between the Association, THE AMERICAN VETERINARY REVIEW, and the *Journal of Comparative Medicine*.

The subject of those applicants for membership whose names were filed after Sept. 1st, was then taken up and discussed, and

on motion of Dr. Clements, seconded by Dr. Huidekoper, it was decided to recommend for admission all names properly vouched for received to date of meeting. Carried.

The names being read over by the Secretary, and there being objection raised to the recognition of the Veterinary Department of Cornell, and later on, the Veterinary Department of Iowa Agricultural College, this point was brought up for discussion, and participated in by all present, as well as Dr. Winchester, on behalf of Cornell; after which Dr. R. A. McLean offered as a motion, that the former action of the Association, in refusing to recognize Cornell, be reindorsed. Seconded by Dr. Hoskins.

The question being put, was declared defeated, and a yea and nay vote was called for. The count showing on the nay vote, Michener, Huidekoper, Paquin, Butler, Clement, and Lyford.

Yea votes—R. A. McLean and Hoskins.

Dr. Paquin then moved to recommend for membership the names of the graduates of the Veterinary Department of the Iowa Agricultural College. Seconded by Dr. Clement.

Dr. R. A. McLean offered as an amendment: That this Association recognize the Veterinary Department of the Iowa Agricultural College as a regularly organized and recognized Veterinary School. The amendment was accepted, and, on motion, adopted.

Letters and telegrams of regret at their absence from the meeting were received from Prof. J. H. Raymond, Prof. D. McEachran, Prof. A. Smith, and from Drs. N. P. Hinkley, John Tillin, James A. Waugh, Cooper Curtice, Austin Peters, and other members and veterinarians.

On motion, the meeting adjourned.

W. HORACE HOSKINS, *Secretary.*

Secretary Hoskins: The Comitia Minora recommend that the following names be dropped from the roll of membership for non-payment of dues and other causes:

Drs. G. S. Agersborg, Vermilion, Dakota; E. C. Beckett, Boston, Mass.; M. Bunker, Newton, Mass.; Joseph Bushman, Washington, D. C.; L. C. Campbell, Philadelphia, Pa.; C. Col-

burn, West Dedham, Mass.; B. P. Colsson, Mobile, Alabama; J. C. Corlies, Newark, N. J.; J. B. Cosgrove, Worcester, Mass.; L. M. Crane, New York, N. Y.; H. J. Detmers, Columbus, Ohio; W. S. DeVoe, New York, N. Y.; William Dimond, Portland, Oregon; G. H. Farnsworth, Rutland, Vt.; S. S. Field, New York, N. Y.; H. T. Foote, New York, N. Y.; John J. Foy, New York, N. Y.; E. Hanshew, Brooklyn, N. Y.; J. J. Hanshew, Brooklyn, N. Y.; William Harris, New York, N. Y.; W. P. Humphrey, Elizabeth, N. J.; James L. Kemp, New York, N. Y.; Robert Laidlaw, Albany, N. Y.; Alex. Marshall, Brookline, Mass.; William R. Mitchell, New York, N. Y.; William Miles, Charleston, Ill.; Samuel W. Mathues, Elam, Pa.; J. E. McNichol, New York, N. Y.; M. J. Otto, New York, N. Y.; S. L. Richards, Salt Lake City, Utah; J. J. Ryder, Rondout, N. Y.; J. E. Ryder, Jamaica, L. I., N. Y.; J. E. Rich, Hartford, Conn.; Charles Schaufler, Philadelphia, Pa.; William T. Simmons, Boston, Mass.; J. M. Skally, Boston, Mass.; J. M. Walton, New York, N. Y.; Charles Williams, Philadelphia, Pa.; Charles Winslow, Rockland, Mass.; K. Winslow, Boston, Mass.

*Dropped for Unprofessional Conduct.*—Drs. F. S. Billings, Chicago, Ill.; W. B. Brothero, Clearfield, Pa.

*Died Before Qualifying.*—Dr. S. S. Moyer, Hilltown, Pa.

*Deceased.*—Drs. A. Lockhart, New York, N. Y.; G. A. Lathrop, Binghamton, N. Y.

*Resigned.*—Dr. A. L. Hummel, Philadelphia, Pa.

The report of the Comitia Minora was accepted and the recommendation to drop the names of the delinquents from the roll was approved.

President Michener: There is a further recommendation of your Comitia Minora, gentlemen, and it is for you to say what action shall be taken in respect to the expulsion of Dr. Billings, which has been unanimously recommended. I will ask the Secretary to read the letter from Dr. Billings so you may know the tenor of it, and if you feel as your Comitia Minora did this morning, I do not think there is any doubt but what the name of Dr. Billings will be dropped from the list of members of this Association.

Dr. McLean: I rise to a point of order. Our Executive Committee is established for the purpose of keeping out public clamor, such as this, from our general meetings. The letter referred to is utterly unworthy of any man, much less a veterinary surgeon. I move you that the reading of the letter be dispensed with.

Seconded.

President Michener: I am willing to suppress the letter if the Association wish to endorse the action of the Comitia Minora without hearing the letter read.

The motion to dispense with the reading of letter referred to was unanimously carried.

On motion the action of the Comitia Minora recommending the dropping of Dr. Billings' name was approved, and Dr. Billings was declared expelled from membership in the Association.

President Michener: The next recommendation of the Comitia Minora refers to the names recommended for admission to membership with us. The Secretary will please read the names of those recommended by the Comitia Minora.

Secretary Hoskins read the names of the proposed members and on motion of J. C. Myers, Sr., of Ohio, duly seconded, the names presented by the Comitia Minora were accepted collectively.

Mr. Faust: I move you, sir, that the Secretary of the Association be instructed to cast the ballot of the Association for each of the members recommended for admission to membership.

Seconded. Carried.

Secretary Hoskins: Pursuant to the direction of the Association I would announce that I have cast the ballot of the Association for each of the candidates for admission to membership and that the following have been duly elected members of this Association:

Roscoe R. Bell, D.V.S., Am. Vet. Coll. (Dr. R. A. McLean) 7th Ave. and Union Street, Brooklyn, N. Y.; Thomas M. Buckley, D.V.S., Am. Vet. Coll. (Dr. R. A. McLean) 480 Clermont Ave., Brooklyn, N. Y.; Gerald E. Griffin, D.V.S., Am. Vet. Coll. (Dr. W. J. Coates) 5th Cavalry, Fort Reno, Ind. Ty.; Richard R. Morrison, D.V.S., Am. Vet. Coll. (Dr. W. J.

Coates) 141 West Fifty-fourth Street, New York City; Joseph Ogle, Jr., D.V.S., Am. Vet. Coll. (Dr. W. J. Coates) 302 West Forty-sixth Street, New York City; R. W. Hickman, V.M.D., Vet. Dept. U. of Pa. (Dr. C. B. Michener) Greene Ave. and Broadway, Brooklyn, N. Y.; H. B. Ambler, D.V.S., Am. Vet. Coll. (Dr. C. B. Michener) Greene Ave. and Broadway, Brooklyn, N. Y.; J. L. Kilborne, D.V.S., Cornell Vet. Dept. (Dr. J. F. Winchester) Dept. of Agriculture, Washington, D. C.; Richard Letts, D.V.S., Am. Vet. Coll. (Dr. W. E. B. Miller) Bloomfield Street, Hoboken, N. J.; D. S. Breslin, D.V.S., Am. Vet. Coll. (Dr. W. H. Pendry) 94 Adams Street, Brooklyn, N. Y.; A. T. Thompson, D.V.S., Am. Vet. Coll. (Dr. W. Horace Hoskins) Evansville, Ind.; J. Huhne, D.V.S., Am. Vet. Coll. (Prof. A. Liautard) 141 West Fifty-fourth Street, New York City; R. C. Webster, V.M.D., Vet. Dept. U. of Pa. (Dr. W. Horace Hoskins) Media, Pa.; Harry E. Bates, D.V.S., Am. Vet. Coll. (Dr. C. E. Ross) New Haven, Conn.; T. L. Armstrong, D.V.S., Chicago Vet. Coll. (Dr. W. H. Wray) Hotel Richmond, Chicago, Ill.; N. P. Valerius, D.V.S., Am. Vet. Coll., Watertown, Wis.; James A. Waugh, V.S. (Dr. H. D. Gill) 6th Cavalry, U. S. A., Fort Wingate, N. M.; E. A. A. Grange, V.S., Toronto Vet. Coll. (Dr. Tait Butler) Agr. College, Mich.; John Tillie, D.V.M., Iowa Agr. Coll. (Dr. Tait Butler) Muscatine, Iowa; S. Stewart, M.D., D.V.M. (Dr. Tait Butler) Council Bluffs, Iowa; C. A. Carey, B.S., D.V.M., Iowa Agr. Coll. (Dr. Tait Butler) Brookings, South Dakota; G. C. Williams, V.S., Ont. Vet. Coll. (Dr. Tait Butler) Dewitt, Iowa; John D. Rutherford, V.S., Ont. Vet. Coll. (Dr. Tait Butler) Rock Island, Ill.; George A. Johnson, D.V.M., Vet. Dept. Iowa Agr. Coll. (Dr. Tait Butler) Odebolt, Iowa; Louis A. Thomas, D.V.S., Chi. Vet. Coll. (Dr. Tait Butler) Atlantic, Iowa; Gulian C. Fagan, D.V.S., Am. Vet. Coll. (Dr. W. H. Hoskins) 232 East One Hundred and Sixteenth Street, New York City; A. W. Swedeburg, V.S., Tor. Vet. Coll. (Dr. E. S. Walmer) Third St. and Pennsylvania Ave., S. E., Washington, D. C.; John A. Meyers, D.V.S., Am. Vet. Coll. (Dr. E. S. Walmer) Harrisonburg, Rockingham Co., Va.; S. L. Hunter, V.S., Tor. Vet. Coll. (Dr. D. Lemay) Ft. Leavenworth, Kansas; C. Douglass McMurdo, D.



V.S., Am. Vet. Coll. (Dr. D. Lemay) Fort Riley, Kansas; W. H. Richards, V. S., Ont. Vet. Coll. (Dr. D. Lemay) 16 West Fifth Avenue, Emporia, Kansas; C. W. Purcell, V.S., Ont. Vet. Coll. (Dr. W. H. Hoskins) Old Orchard Beach, Me.; M. A. Piche, V.S., Montreal Vet. Coll. (Waugh and Hoskins) Fort Custer, Mont.; Herbert Neher, D.V.S., Am. Vet. Coll. (Dr. C. B. Michener) 350 West Forty-eighth Street, New York City; Olaf Schwartzkopf, V.M.D., Royal Vet. Coll., Berlin, (Dr. W. H. Hoskins) St. Anthony Park, Minn.; James L. Kidd, D.V.S., Am. Vet. Coll. (Dr. W. H. Hoskins) 102 East Main Street, Lexington, Ky.; D. B. McCapes, V.S., Ont. Vet. Coll. (Dr. W. H. Hoskins) Vermilion, South Dakota; W. L. Williams, V.S., Montreal Vet. Coll. (Dr. W. H. Hoskins) Bloomington, Ill.; J. M. Tye, V.S., Ont. Vet. Coll. (Dr. W. H. Hoskins) Muncie, Ind.; A. F. Schreiber, Vet. Dept. U. of Pa. (Dr. W. H. Hoskins) Sixty-first St. and Elmwood Ave., Philadelphia, Pa.; A. S. Barnes, V.S., Ont. Vet. Coll. (Dr. Tait Butler) Maquoketa, Iowa; T. A. Brown, D.V.S., Chi. Vet. Coll. (Dr. Tait Butler) Chariton, Iowa; J. T. Kennedy, V.S., Ont. Vet. Coll. (Dr. Tait Butler) West Union, Iowa; H. N. Waller, V.S., Ont. Vet. Coll. (Dr. Tait Butler) Windom, Minn.; Alexander Plummer, D.V.S., Chi. Vet. Coll. (Dr. Tait Butler) Mammoth Hot Springs, Wyoming; S. S. Baker, D.V.S., Chi. Vet. Coll. (Pres. Williams) 609 West Madison Street, Chicago, Ill.; O. J. Lanigan, D.V.S., Chi. Vet. Coll. (Pres. Williams) Wenona, Ill.; J. S. Spangler, D.V.S., Chi. Vet. Coll. (Pres. Williams) Aurora, Ill.; C. E. Sayre, D.V.S., Chi. Vet. Coll. (Pres. Williams) 3725 Cottage Grove Ave., Chicago, Ill.; A. H. Baker, V.S., Mont. Vet. Coll. (Pres. Williams) 2537 State Street, Chicago, Ill.; Joseph Hughes, M.R.C.V.S. (Pres. Williams) 2537 State Street, Chicago, Ill.; R. J. Withers, M.D., V.S. (Pres. Williams) 2537 State Street, Chicago, Ill.; J. M. Wright, Chicago Vet. Coll. (Pres. Williams) Chicago Vet. Coll., Ill.; G. W. Pope, Chicago Vet. Coll. (Pres. Williams) 2537 State Street, Chicago, Ill.; R. G. Walker, Chicago Vet. Coll. (Pres. Williams) 2537 State Street, Chicago, Ill.; John Casewell, M.R.C.V.S. (Pres. Williams) 639 W. Madison Street, Chicago, Ill.; P. Quitman, Chicago Vet. Coll. (Pres. Williams) Chicago, Ill.; E. H. Ramsey, Ontario Vet. Coll. (Dr.

Paul Paquin) Louisiana, Mo.; L. M. Klutts, Chicago Vet. Coll. (Dr. Paul Paquin) Clinton, Mo.; J. Johnson, Ont. Vet. Coll. (Dr. Paul Paquin) St. Joseph, Mo.; John S. Meyer, Am. Vet. Coll. (Dr. Paul Paquin) St. Joseph, Mo.; Harry B. Piatt, Ont. Vet. Coll. (Dr. Paul Paquin) St. Louis, Mo.; R. J. Sollberger, Berne, Switzerland (Dr. Paul Paquin) St. Louis, Mo.; John W. Conoway, Chicago Vet. Coll. (Dr. Paul Paquin) Columbia, Mo.; F. O'Brien, Ontario Vet. Coll. (Dr. Paul Paquin) Hannibal, Mo.; A. Rouif, Montreal Vet. Coll. (Dr. Paul Paquin) St. Louis, Mo.; C. C. Jackson, Am. Vet. Coll. (Dr. Paul Paquin) Marshall, Mo.; J. Hawkins, Ont. Vet. Coll. (Dr. Paul Paquin) Detroit, Mich.; Wm. Shaw, Ont. Vet. Coll. (Dr. Tait Butler) Dayton, Ohio; C. E. Hollingsworth, Ontario Vet. Coll. (Dr. Williams) La Salle, Ill.; F. H. P. Edwards, Ontario Vet. Coll. (Dr. Tait Butler) Iowa City, Iowa; S. B. Nelson, Iowa Agr. Coll. (Dr. Tait Butler) Ames, Iowa; J. M. Phillips, Chicago Vet. Coll. (Dr. D. Lemay) Wichita, Kansas; E. O. Phillips, Chicago Vet. Coll. (Dr. D. Lemay) Wichita, Kansas; R. Price, Montreal Vet. Coll. (Dr. Lyford) St. Paul, Minn.; Dr. Hinman, Ontario Vet. Coll. (Dr. Lyford) St. Paul, Minn.; T. E. White, Am. Vet. Coll. (Dr. Paul Paquin) Sedalia, Mo.

#### HONORARY MEMBERSHIP.

Prof. J. H. Raymond, M.D., 173 Joralemon Street, Brooklyn, N. Y. (first Commissioner of Health to recognize the need of a veterinarian on the staff) proposed by Dr. L. McLean; Prof. H. M. Biggs, Bellevue Medical College, New York City, foot of E. Twenty-sixth Street, proposed by Dr. H. D. Gill.

#### APPLICANTS FOR MEMBERSHIP, 1891.

Dr. J. T. Ryan (Montreal), Chicago, Ill.; voucher, Dr. W. L. Williams. Dr. W. H. McKinney (Chicago Coll.), Geneseo, Ill.; voucher, Dr. M. R. Trumbower. Dr. J. T. Donnelly (N. Y. College), Astoria, L. I., N. Y.; voucher, Dr. R. A. McLean. Dr. E. D. Roberts (Chicago), Janesville, Wis.; voucher, Dr. Joseph Hughes. Dr. D. W. Cormack (Chicago), Watertown, South Dakota. For Honorary Membership, Dr. Theobald Smith, B.A., M.D., Washington, D. C. Proposed by Dr. Cooper Curtice.

The Secretary would beg to announce that, through accident, his list of new applicants has been lost, and he would request a re-filing of their names by their respective vouchers.

Pres. Michener: I think we older members would like to have the newly elected members rise in their places that we may know them.

In response to the suggestion of the Chair, the newly elected members rose in their places and were complimented by President Michener as follows:

I must say, gentlemen, that at least you represent the beauty of this National Association. (Applause).

Secretary Hoskins: The Association has refused to recommend for reinstatement the name of Dr. W. T. McCoun of Oyster Bay, Long Island.

President Michener: In that case there is no action for this body to take now as the Comitia Minora have declined to recommend his reinstatement. Of course any individual member has a right to find out from the Comitia Minora the reasons for their refusal, which if deemed insufficient, the matter may be presented at a subsequent meeting of the Association and when the gentleman can be present to defend himself. That is all the action we can take in the matter now.

I will call for the report of the Committee on Intelligence and Education, of which Dr. Austin Peters is chairman.

Dr. Peters submitted the report of his committee through Secretary Hoskins, as follows:

#### REPORT OF THE COMMITTEE ON INTELLIGENCE AND EDUCATION.

BY AUSTIN PETERS, M.R.C.V.S., CHAIRMAN.

*Mr. President and Gentlemen:*

As chairman of your Committee on Intelligence and Education, I have the honor to submit the following report:

Last autumn I placed myself in communication with the other members of this committee, and this summer I sent the following circular to the Assistant State Secretaries:

23 COURT STREET, BOSTON, July 10, 1890.

DEAR DOCTOR:—Will you, as an Assistant State Secretary of the U. S. Veterinary Medical Association, kindly inform me as to the following points:

Have you any laws in your State protecting veterinary surgeons in the practice of their profession?

If there are any such laws, how do they work, and of what benefit are they?

Any information you may have to impart concerning the standing of the veterinary profession in your community; any recent advances it has made which would be of value in our report, or any hints or suggestions you may have to make concerning the work in hand, will be gladly received.

Yours truly,

AUSTIN PETERS, M.R.C.V.S.,  
*Chairman of Committee on Intelligence and Education.*

From the various letters which I received in response I have been able to compile the following rambling remarks. In sending the circulars to the Assistant State Secretaries I took the precaution to enclose a stamped envelope with my address printed upon it, in order to be sure of a reply; yet out of a total of twenty-eight circulars I received but twenty answers. It seems to me that there is very little excuse for such lack of interest in matters pertaining to our profession, and it is my intention to furnish our President-elect with a list of the delinquents in order that he may, if he sees fit, appoint new men in their places.

From the view I take of the various matters considered in our report, the subject of Veterinary Education and what may be called Intelligence are so closely associated together that it is impossible to entirely separate them; therefore, they will have to be considered to a certain extent as a whole.

I prefer, however, to begin with the subject of Education, following with other topics which may be of interest to us. In 1863, when this Association was first organized, it consisted chiefly of men who were non-graduates; there were very few members of the Association who were graduates of veterinary schools, because there were no veterinary schools in the country from which they could graduate, and the few having diplomas obtained them by pursuing a course of study abroad. Yet these non-graduates were, as a whole, honorable, conscientious men; good practitioners of their profession; fairly well read, and enjoyed the respect and confidence of the communities in which they lived. But a change has gradually taken place in the *personnel* of our Association; many of the old non-graduates have passed away, and but a few remain, and the members who have joined us of late years have been all graduates of veterinary colleges, and to-day it would be an impossibility for a non-graduate to become a member of our body. This change, however, was brought about in a great measure by these non-graduates themselves; they said that now the country has a number of veterinary schools, there is no excuse for a young man about to enter the veterinary profession not acquiring an education to fit him for the work which he is to pursue in the future. Because they had to acquire their knowledge from the teachings of their fathers, from their readings and personal observations and experiences, was no reason why another generation should do so when it could have the advantages of schools, with instructors trained to their work; dissecting rooms, laboratories and modern text-books at their disposal, together with the advantages of hospital practice and clinics. These men asked for something better and they got it. The question now propounds itself to us, shall we be satisfied with our veterinary schools as they are? or shall we not, in this great age

of progress, ask for something better—a longer, more thorough course of study, with a higher educational qualification for matriculation, and a higher standard of graduation than at present prevails? The old-fashioned non-graduates considered it no reflection upon themselves when they insisted that the present generation should make the most of advantages which they did not have, neither need we feel that we offer any affront to ourselves when we ask for something better.

I will not speak of individual schools, as it might lead to personalities and comparisons which are, to say the least, disagreeable; but we do insist upon a higher education, a proper matriculation examination, a longer course of study in most of the schools—three sessions of nine months each, at least; four sessions equally long would be better. The faculty should contain a large enough number of veterinarians to prevent the school graduating students with but one man's ideas. Where a number of veterinarians are interested in the school the students also receive greater clinical advantages, as in such instances practitioners will take pains to send their interesting or unusual cases to the school for the benefit of the students.

The matriculation examination at most of the veterinary schools on the Continent, where such an examination is required, is a farce, and men enter and graduate who can barely write their own names, much less read or write intelligently or intelligibly. This state of affairs should be remedied at once and no student allowed to enter who did not, at least, present evidences of a good English education, and the higher above this the better. A collegiate or academic course of some kind prior to the student's entering upon his veterinary studies should be encouraged, as it is to such an extent in the medical profession; and to my mind the best preparatory course for the future veterinary surgeon is to attend one of our agricultural colleges; here the study of botany, chemistry, agriculture, the characteristics of the various breeds of animals and general principals of breeding, together with sufficient knowledge of French and German to be able to read foreign veterinary and medical works, is one which will well fit him for his future work.

Dr. M. R. Trumbower, of this committee, writes as follows:—"It becomes daily more and more evident that we need a better and higher educational standard and increased facilities in our veterinary schools, and I think the inauguration of a longer and more scientific course of study is near at hand. I doubt, however, whether all the colleges can be induced to adopt a uniform standard for study and examination; hence our support should be given to such institutions only which indicate a willingness to meet the advanced demands.

"It is absolutely necessary that the requirements for admission (educationally) be made sufficiently strict to exclude many such as were able to matriculate in the past. The professional standard can be raised by a representation of better men, and it is the only way to do it."

I heartily concur in the above and agree with Dr. Trumbower that on this great continent there will always be veterinary schools and veterinary schools, and that in the near future we, as an Association, will have to countenance those only which evince a disposition to meet the requirements of the times.

Dr. Colsson, of this committee, refers to the fact that many veterinary gradu-

ates are unable to write a prescription properly, and even show a deplorable ignorance of the meaning of the signs and symbols used in prescription-writing. He proposes to remedy this by adding an examination in pharmacy and prescription-writing to the matriculation examination of the schools. I do not agree to this, as I think that the course of study in the veterinary schools themselves should deal with and remedy the defect.

In an article entitled "Veterinary Education in America," which appeared in the *AMERICAN VETERINARY REVIEW* for January, 1890, Dr. Tait Butler, of this committee, has said much which I have left unsaid, and I can only add a fervent amen! to what he writes.

In addition to educating the student, we must pay a little attention to the advancement of the practitioner. Because a young man has obtained his degree as a veterinarian is no reason for selling his library, and as a general rule he does not know any more the day after he graduates than he did the day before. A diploma is simply a certificate of having gone through a certain course of study, and successfully passed a required examination; it merely marks a narrow landing on the long stairway of life; and if a man's future is to be a success in the greatest measure, he must continue to be a diligent student and careful observer. Every veterinary surgeon *must* keep abreast of the medical advances of the times; he should take both of the American veterinary journals, one of the English veterinary magazines, and if he can read French or German he should take a French or German veterinary magazine—or both, as the case may be. In addition to this he ought to subscribe to a first class medical periodical, in order to know what is being done in the sister profession. He should not only subscribe to these journals, but he should read them carefully and intelligently after they come.

Because your teachers or professors told you a thing was so when you were a student, fifteen or twenty years ago, do not think it is so to-day, or that your instructor would say it was, if he has kept up with the times; for in many ways medicine has made great advances during the past decade or two, and most writers on pathological subjects are ready to acknowledge that many things which they wrote a few years ago are wrong to-day.

The great discoveries of Pasteur, Koch and other investigators have revealed new truths as to the etiology and character of many diseases, which even if suspected by some, remained unproven until the modern methods of studying bacterial maladies were introduced. The progress made in the application of anti-septic and aseptic methods in surgery is also of quite recent origin, together with the knowledge of the parts played by different germs in the various suppurative and septic processes.

Our veterinary text-books are way behind the times on all these recent discoveries, and will have to be rewritten in the near future, or their places will have to be taken by more modern works.

The Chairman of this committee last year, in his annual report, spoke of the tendency in medical schools to substitute recitations from standard text-books for the didactic lecture—the students studying up a chapter or two in various text-books daily, and then having recitations on what they had read. I am of the opinion, however, that the didactic lecture should remain a feature of the course

in our veterinary schools, for the reasons that our text-books are not up to the times, and that in most of our veterinary schools a cram course of study is given, and in no other way can so much be crammed into a student in the least possible space of time as by the didactic lecture.

As a student I was very fond of listening to lectures, much preferring them to reading. A well arranged course of lectures can be compared to a boy with a plum cake having his nurse pull out the plums, one by one, and feed them to him; while a student reading can be compared to the same boy without a nurse, he having to overhaul a good deal of cake to get a few plums—the plums being the useful and interesting facts, the rest of the cake being the extraneous matter which it may be a waste of time for the student to read, and yet which he will read if his efforts are not wisely directed.

Before proceeding further, I wish to make another criticism on members of the profession. It is the readiness with which some men read articles written for the daily papers on scientific medical subjects, and accept them as valuable facts, such as arguments against the germ theory of disease, and the like. Remember that the “doctors” who write for the newspapers are men who have no easy access to the columns of current medical literature, and that their opinions and arguments carry very little weight with members of their own profession; it would be much better for the eager seeker after truth to confine his scientific reading to veterinary and scientific magazines of acknowledged good character, and leave newspaper science for the perusal of the laity—if members of that great body choose to waste time reading such articles.

Another factor for educating the veterinary practitioner is the Veterinary Association. Most States where there are any number of veterinarians, now have their veterinary societies; some States have more than one, and in some few instances certain State Associations have combined with their colleagues in neighboring States, to form inter-State Associations. These organizations are capable of doing much good to the profession in various ways. If members will take the pains to write good papers for the meetings, these essays and the discussions following them are of benefit to the practitioner from an educational standpoint. The careful reporting of interesting cases occurring in the practice of different members is also of value in this connection. In addition to the above it should create a feeling of good fellowship and *esprit-de-corps* in the profession, and also form a valuable basis for co-operation when any work is to be undertaken for the advancement of veterinary science.

Every veterinarian who takes any interest in his work beyond the dollars and cents he can make out of it, should belong to the local veterinary society where he resides, as well as to the great National organization meeting here to day and to-morrow. In joining a veterinary association the practitioner should not join from a selfish motive, for his own personal aggrandizement, to advertise himself in any way, or to use it as a lever to gain a political position, but he should enter for the purpose of becoming better acquainted with his colleagues, adding to his education and doing all he can in a generous, unselfish way, for the advancement of a noble and useful profession.

The next points of interest to be considered are the results of the circulars sent to Assistant State Secretaries, asking them for information concerning legis-

lation to protect the poor, oppressed, down-trodden veterinarian in different States, and the effect of such legislation upon his well-being, besides some of the interesting incidental matters which were brought out by the replies I received. As far as I have been able to ascertain there are but four States in the Union where laws have been enacted regulating the practice of veterinary medicine, and in all of them the law is quite similar. These States are New York, New Jersey, Pennsylvania and Wisconsin. A description of the law in one State will answer for all, so I take the privilege of reading the letter on the Wisconsin law by Dr. V. T. Atkinson, of Milwaukee, Assistant State Secretary for Wisconsin, following with comments upon the letters of the Assistant State Secretaries in the other three States. The following is Dr. Atkinson's letter :

MILWAUKEE, August 25, 1890.

AUSTIN PETERS, Esq., M.R.C.V.S.,

*Dear Doctor:*—Yours of July 10th received in my absence, hence the delay in answering. In reply : Chapter 347 of the Laws of Wisconsin for 1887 is, I am told, a copy of a law which was in force in New York at the time our law was enacted. It provides that no person shall be considered a veterinary surgeon nor allowed to give expert testimony as such, or to collect fees for services by process of law except their credentials be recorded in the Veterinary Register kept in the office of the Register of Deeds of the county in which the practitioner resides. Such credentials may consist of, 1st, a diploma from a regular college; 2d, a certificate of membership from a duly organized Veterinary Medical Association; 3d, an affidavit of five years practice prior to the passage of the law.

In its workings this law is practically no good. Our State Society has degenerated into a society of empirics. At the last meeting there were only three graduates present, of whom I was one and remained only long enough to sever my connection with it.

You ask what the standing of our veterinarians is. It would be hard to strike an average, but I think the graduates, as a rule, command the respect of the communities in which they reside and that the profession is gradually assuming the important position to which it is entitled.

Concerning *protective* laws, my observation does not lead me to believe that they are likely to be of much service to any practitioner who is worth protecting. It has always seemed to me that a man who could not compete with a *quack* successfully would not be likely to reflect much credit on his associates in the profession even if the quack were removed from competition with him.

Hoping that I may have the pleasure of meeting you in Chicago next September, I am,

Very cordially yours,

V. T. ATKINSON, *State Secretary, U.S.V.M.A.*

Dr. Atkinson's letter is so good that any comments of mine upon it would only take away from its effectiveness.

In New Jersey, Dr. Autenreith, of Jersey City, thinks the law fails to be of any practical benefit to the profession at large, as its provisions are too vague and indefinite; the most hopeful feature about it to him is that the legislators of the State do recognize the fact that in time the existing laws may prove a nucleus for the development of further legislation, which may prove more useful and efficient in the advancement of the profession in that State. So far, the New Jersey law, which was passed two years ago "has proven to be of no special benefit, though perhaps it may have inspired more confidence on the part of the laity in the qualified veterinarian, to such as know of his existence."

Dr. Kooker, writing for Pennsylvania, says that the law in that State has



been properly enforced in only about half the counties, the prothonotaries in the other counties not having been particular as to who registered or how they registered. The Veterinary Associations in Pennsylvania have brought several suits, to bring about the observance of the law, most of which they have lost, and some of which have been appealed to the Supreme Court. He says that in his State the profession is strong and has influential men in every county, and can get any proper law passed that they ask for. The trouble with the present law is that it was drawn up by veterinarians when it should have been by lawyers, and he concludes that it is about as wise for veterinarians to act as lawyers, as it would be for lawyers to act as veterinarians.

In New York State, judging from what Dr. Coates has to say, I should think the law worked better. As to the standing of the profession there, he says that in New York City the public are educated up to the point where they appreciate the qualified veterinarian, and in the rest of the States man's standing in the community and success in obtaining practice depends largely on who he is, and his social standing.

It seems to me that the legislation so far obtained is far from satisfactory; it legalizes a lot of ignorant quacks, some of which can only make their marks when called upon to register in the County Clerk's office, and that they are going to be a good many years in dying off before the coming graduates will be benefited; it recognizes a lot of mountebanks who were much more easily ignored without laws of this class than they are with them. Furthermore, I believe that in this country anybody has a right to employ whom he sees fit to do anything, and that if an individual wishes to employ a quack to do his work he has a perfect right to do so. It seems to be the modern idea that legislation of some kind must be a universal panacea for every ill, whereas, we have more silly laws on our statute books than any country on the face of the earth; and most of them are either not half enforced or else are dead letters altogether. The American people (not including politicians who make the laws) are a pretty level-headed lot, and in time will appreciate the distinction between the educated veterinarian and the quack horse doctor; and also between a veterinarian with an education and a graduate of a so-called veterinary school who can scarcely read or write.

The following letter from Dr. John A. McLaughlin, of Providence, R. I., is so good and expresses so exactly what I think, that I take the liberty of reading it.

PROVIDENCE, R. I., July 8, 1890.

DR. AUSTIN PETERS,

*Dear Doctor:*—In answer to your note, allow me to state that there are no laws, as far as I am aware, protecting the veterinary surgeon. If there are they are a dead letter.

As to the standing of the veterinary profession, it stands better with the public than it does with its own members; in other words, the public are willing, if not exactly anxious to receive us at our own worth, from which I have but one suggestion—that we need *improvement* more than legislation; that we will benefit our profession more if we put our endeavors in our own improvement than in demanding or begging legislation to make a veterinary "trust."

The public are intelligent enough to judge between the capable and the incapable men. If legislation were had to the effect that no citizen could employ any but a graduated veterinary surgeon, I believe it would do more injury than good. The people here would kick, and kick hard!

I look upon the fact that the citizen of the United States is intrusted with more important matters—electing the President, for example—than choosing a veterinary surgeon to treat his animals.

We all want the best of everything—if we can afford it—and if we cannot we want the best we can afford; as it is in everything else, so I believe it is in veterinary matters. The public are willing to receive us, and give us our proper sphere, but I am afraid we fall just a little below their ideal, and I doubt if legislation will bring us one bit nearer to it.

Respectfully,

JOHN A. McLAUGHLIN.

On the other hand there are legislative measures to which we might much better give our attention, and compel the public and the government, both local and general, to appreciate the difference between the well educated veterinarian and the ignorant empiric. Instead of endeavoring to pass laws to prevent some one hiring an ignoramus if he wants to, we should devote our untiring energies to striving to secure a kind of legislation which, to my mind, would benefit us as individuals very much more, as well as the profession and the public. I refer to laws which would define, 1st, what an educated veterinarian is, and then forbid any veterinary testimony given in courts of law being considered as expert, except it be given by a properly educated veterinary surgeon. I would also have it enacted that every State and city Board of Health have for one of its members a qualified veterinarian, and that such only should be employed for inspecting the animals at abattoirs, meats offered for sale in cities where a meat inspector is employed, and that a system of dairy inspection to secure a healthy milk supply be inaugurated in all States, and that the dairy inspectors must be educated veterinarians. I would also have it enacted that when the officials of a State, city or town employ a veterinary surgeon he must be a legally qualified man. By thus compelling official recognition the public would be more rapidly educated up to distinguish between the educated man and the quack, than in any other way.

In my own city of Boston for instance, the seat of culture and learning, where one might expect better things, you will find a veterinary college that you never even heard of; it has but one graduate and only three professors. The triumvirate composing the faculty is the Boston Board of Fire Commissioners, and the graduate who drives around with "V.S." worked in gold letters on his coat collar, was formerly a hoseman. The records say that the Fire Commissioners used formerly to employ a veterinary surgeon when they required one; but the veterinary requirements of the department, as the city grew, became so great that the office of veterinary surgeon was established, and a member of a certain hose company promoted to fill the position. If any public office requiring a young M.D. were filled in such a way there would be a grand hue and cry, but as it is only a veterinary surgeon, it makes little difference who does the work. The emoluments of the position are probably not enough to cause a pang of envy to shoot through any one's heart. I merely mention it as an instance. For a year past the Boston Board of Health has employed a qualified veterinarian as inspector at the Brighton abattoir, which is a step in the right direction; but as yet we have no qualified inspector of meat in the city, and no dairy inspector exists at all, except that milk sold in Massachusetts has to come up to a certain

chemical standard, thirteen per cent. of total solids : yet the milk is consumed without any knowledge of the health or sanitary surroundings of the cows producing it. Boston is ahead of most other large cities in this country in having a properly qualified veterinarian as inspector at the abattoir ; in other respects she is much the same and in other ways there are a few cities in advance of the rest in having veterinarians appointed to the Board of Health—for example, New York, Brooklyn and Jersey City. I have taken Boston as an example because living there I know the state of affairs there.

The recognition which we most demand from the general government just now, is the organization of a proper army veterinary corps, to place army veterinary surgeons in this country on an equality with commissioned officers and with their confreres in every other country on the face of the globe having any claims to civilization. I will not say any more upon this matter as I suppose there will be a report from the Committee on Army Legislation, dealing with this subject in detail.

With regard to the standing of the profession in various parts of the country, I have incidentally received quite a good deal of information from the Assistant State Secretaries in response to my circulars. I find that veterinarians have the best standing in the communities where qualified men have been longest known. For example, Boston, New York City, and cities around New York ; outside of these centres the West is the portion of the country that shows the greatest appreciation of veterinary science. With their great live stock interests as their principal sources of wealth, it is the Western States which have appointed State Veterinarians and taken the most active steps to pass laws for the eradication and suppression of contagious animal diseases ; and it is in the South where the greatest lack of progress is shown.

In Missouri the law is particularly good because it first defines that the State Veterinarian must be a graduate of a reputable veterinary college, beside which he must present good evidence to the trustees of the State Agricultural College that he has a good practical and theoretical knowledge of the diseases of animals before he can receive his appointment. If he cannot perform all his duties alone he can appoint deputies in various parts of the State to act as assistant veterinarians ; and the law provides that they also must be competent and graduates of veterinary colleges. This is a fitting tribute to the veterinary graduates that every State should be made to pay. This law provides for dealing with all infectious animal diseases, so that under it the State Veterinarian can take measures to suppress tuberculosis and actinomycosis, as well as other communicable maladies. The chief objection is the amount of salaries—I think \$2,500 a year is too small salary for a State Veterinarian, and I know \$5 a day and expenses will not procure any very heavy timber to act in the capacity of deputies.

Taking one section of the country after another, judging from the letters I have received, and being as brief as possible, I find that in New Hampshire the people appreciate the usefulness of veterinarians, but do not yet readily distinguish between the graduate and quack. In Massachusetts the profession stands for the most part well, especially in Boston. Dr. McLaughlin's letter which I have just read speaks for Rhode Island ; and in Connecticut I find that the veterinary surgeon is constantly gaining in the esteem and confidence of people around

the cities where his practice is, although he is little known or understood in the rural districts. Going outside of New England, I have already spoken of New York and New Jersey. In Pennsylvania the profession advances in public esteem by means of the Veterinary Department of the University of Pennsylvania, and the Veterinary Associations, and by the influence of the *Journal of Comparative Medicine*, published in Philadelphia. From Maryland I learn that in and around Baltimore, at least, veterinarians for the most part stand well with the public, and that they are recognized by the medical profession. Going farther South I find that in the District of Columbia and Virginia the qualified man and quack stand on an equal footing, except that the one can demonstrate to the people that he is better than the other; South Carolina contains but two qualified veterinarians; but the one who wrote to me does not complain of his lot at all, always being treated considerately and courteously. Judging from a letter from Savannah, Georgia is much less of a veterinary paradise; the veterinarian is not only unprotected by law, but if a case dies he may be sued for damages by the owner of the patient; there are also no laws for the suppression of contagious animal diseases, and the people do not appreciate a graduate any more than a quack. From New Orleans I learn that the people appreciate the difference between qualified and unqualified men by employing in the majority of cases the former.

In States north of a line drawn east and west through the Ohio river, and west of New York State, the profession advances rapidly and the people appreciate it and make laws for the preservation of their live stock interests; while south of that on the whole, a rather opposite state of affairs exists; this is due largely to the people as influenced by climatic and hereditary influences.

Other matters pertaining to the advancement of the profession could be dwelt upon in this report, but it does not seem best to continue it to too great length.

In conclusion I wish to express my hearty thanks to my fellow members on this committee, and to the Assistant State Secretaries, who answered my circular, for the very able and kindly assistance they have rendered me.

Secretary Hoskins: Dr. Peters has very kindly written to the officers of the Association a letter containing a list of those State Secretaries appointed in the past who have refused to answer communications sent them. The list includes California, Dakota, Delaware, Maine, Utah and Vermont.

Dr. Eves, (Delaware): Mr. President, my name is H. Eves, Wilmington, Delaware. I answered the letter referred to some time ago. I received one a few days ago which I did not answer.

Secretary Hoskins: I will gladly scratch your name off. Are there any others who wish their names scratched off for the same reason?

President Michener: According to the programme, the discussion of the several papers is reserved until all of them have been

read. Accordingly, we will now receive the report of this committee and lay it on the table until the others have been read, or discuss it now, as you desire.

Dr. Griffin: I move that the papers be discussed as read.

Seconded.

Dr. Trumbower: Mr. President, there are a number of committees to report and I fear if we discuss each as submitted we will not get through very early. Therefore I will oppose the motion, as I believe it will be better to take up the discussion after they have all been read.

Dr. Clement: I think it will take no longer to discuss them now than later on.

Dr. Faville: In that respect Dr. Clement is an interested speaker. I agree with Dr. Trumbower and think it better to receive all the papers and discuss them as we see fit afterwards.

The motion being put to a vote was lost and the discussion deferred.

President Michener; I will next call for the report of the Treasurer.

Treasurer Robertson submitted his report as follows:

In bank Sept, 15th, 1890.....	\$694.18
Received from Secretary.....	51.25
	—————
	\$745.43
Paid Secretary deficiency Brooklyn dinner account.....	42.00
	—————
Balance on hand.....	\$703.43

Secretary Hoskins: Mr. President, I will simply report that I have the vouchers and everything here for the inspection of the Finance Committee. I will report that expenses last year were \$543.69. Receipts, initiation fees and dues for the year, \$576.50. I would ask you to refer to the items here.

President Michener: I believe the members of the Finance Committee are absent, and I would appoint as members of the Finance Committee, Dr. William Dougherty, Dr. Robertson and Dr. Williams.

We will next receive the report of the Committee on Diseases.

Dr. A. W. Clement submitted the report of the Committee on Diseases as follows :

#### REPORT OF THE COMMITTEE ON DISEASES.

BY A. W. CLEMENT, Chairman.

During the past year a good deal has been published upon the investigation of infectious diseases. Much of the work shows evidence of thoroughness, while some of it is open to severe criticism.

The duties of such a committee as this are not very well defined, but it seems to us that a passing in review of some of the work which has been brought more prominently before the profession, if discussed in an impartial manner, may be of as much importance as the devotion of more energy to the collection of statistics.

The investigation of the infectious diseases is a slow and oftentimes tedious process. The observer must work methodically, and oftentimes under very great disadvantages.

The work has become so systematized, and so much is being done in this line, that to be hampered by the practical duties of life means, too often, failure in both, to him who would combine clinical medicine with the study of the etiology of disease.

The busy practitioner claims from the laboratory specialist, and his claim is a just one, that such accurate information shall be given him of the cause of disease, and the best remedies to combat such diseases, as are recognized by the more or less scientific classification of clinical medicine. The public claim from the specialist such information as will enable them, if possible, to guard against or to control such diseases as affect a large number of individuals at one time. Such information, usually termed practical, is too often the only information thought to be of any value by the public, and, unfortunately, by a large number of the members of our profession. We are too apt to forget that the only practical information is that which is based upon well understood scientific facts—facts which are the result of patient observation—and the accurate wording of them.

It is not for one moment to be supposed that there are any members of this Association present who are not fully in accord with the germ theory of infectious and miasmatic diseases, and that there is no possibility of the spontaneous origin of this class of diseases. A case of contagious pleuro-pneumonia must be preceded by a case of contagious pleuro-pneumonia. The same is true of tuberculosis, Texas fever, etc., etc. Now, the term germ must not be confounded with the term bacteria, for it has been very well demonstrated that other organisms than bacteria are capable of producing disease.

A well-established example of infection by organisms of a non-bacterial type is malaria in man, and, according to some authorities, Texas fever in cattle. Such diseases as the above are classed as miasmatic diseases; *i. e.*, diseases in which the infecting agent requires a part of its development to take place outside of the body, in contra-distinction to those diseases due to bacterial infec-

tion, where the development is completed inside the body, and the infecting element is thrown off from the body in a condition capable of producing the same disease in another individual.

A great deal of attention is being given at present to those diseases in which there is very considerable evidence of their miasmatic origin. As already stated, the typical miasmatic disease in man is malaria. Its association with non-bacterial micro-organismal infection dates from the researches of Laveran, in Algiers, communicated to the Paris Academy of Medicine in 1881-1882, as also in a large work on the malarial origin of fevers in 1884. As characteristic elements of the blood of persons affected with malaria were found: 1. Pigmented bodies in the interior of red blood corpuscles, which underwent amaboid changes. 2. Crescentic pigmented bodies; 3. A pigmented flagellated organism.

These investigations have since been confirmed by several observers, among them Marchiafava and Creeli, and by Dr. Councilman, of Baltimore, Md.

In 1880, Veterinary Surgeon Griffith Evans described a very fatal disease in horses, mules and camels in India. He discovered a parasite in the blood during life which he first described as a spirillum, but afterward concluded it was a much higher organism. In 1885, Steel found the same parasite as described by Evans, and regarded it as a true spirillum. From clinical observation he concluded that the disease was very closely related to recurrent fever of man. Both Steel and Evans found the disease readily communicable, either by injection or inoculation to dogs, horses, and mules. Cruikshank afterward determined the bodies found in the blood to be a flagellate organism belonging to the group of infusoria.

Burke, Nisum, Raymond and others have written much upon diseases of the malarial type in animals. Some interesting and apparently very accurate investigations have recently been made by Dr. Theobald Smith, of the Bureau of Animal Industry at Washington, D. C. The results of these investigations were published in a paper entitled "Preliminary Observations on the Micro-organism of Texas Fever," read at the Brooklyn meeting of the American Public Health Association, October 23d, 1889. He says: "Southern cattle fever or Texas fever, as it is more popularly known, is an infectious disease of the malarial type." \* \* \* "The infectious agent, bound to a particular locality, is only temporarily transferred by cattle to places free from permanent infection." He experimented upon some native cattle by placing them in the same enclosure with healthy cattle shipped from North Carolina. The experiment was performed at the experimental station in Washington. "The first death occurred in August." \* \* \* "Up to the last week in October, ten had succumbed to the disease and two recovered." \* \* \* "There was also a continual increase or accumulation of the virus in the enclosure, for the animals placed on the grounds late in the season died after an exposure of but one-half to one-third the period which was necessary to destroy those exposed since early summer." Investigations looking toward the bacterial origin of the disease resulted negatively. He found, however, "small round bodies, perhaps 1 m. in diameter, centrally or somewhat eccentrically situated in or upon many red blood corpuscles, which stain fairly in an aqueous solution of methyl violet. They there resemble micrococci in size and form. Unstained they can be seen as pure transparent spaces in the corpuscles."

From these observations made in 1886, and from the negative result of his bacteriological work upon the disease in 1888, Smith came to the conclusion that the disease must be due to a blood-parasite, which for its investigation would need careful microscopical research. For this purpose cattle were brought to the experimental station as above stated. He says: "The intra-globular bodies observed in 1886 were found in all the ten fatal cases of Texas fever." "In fresh spleen pulps they are visible as round or oval, nearly colorless spots from  $\frac{1}{2}$  to 2 m. in diameter on the disk of the red corpuscles, and always somewhat excentrically placid. Careful focussing leaves no doubt that they are within the body of the corpuscles." "The smaller forms then appear as deeply stained cocci, about  $\frac{1}{4}$  to 1 m. in diameter, situated within the unstained circle of the corpuscle. Occasionally the bodies are nearer two feet in diameter, and then the staining may be less dense. Besides the spherical forms, ovoid forms are not uncommon. These usually occur in pairs within the same red blood corpuscles. A still rarer pear-shaped form is encountered in stained preparations of the blood. It is rounded at one pole, while the other is pointed and sometimes drawn out as a short filament." \* \* \* "One other abnormal form found in the blood deserves mention. These dried cover-glass preparations are stained with Loeffler's alkaline methylene blue. A few red corpuscles appear as if their surfaces had been dusted over with minute specks of coloring matter. Whether they are due to the anæmia, or whether they belong to the cycle of the parasite, remains to be determined experimentally."

As to the distribution of the parasites, Smith concludes that the circulating blood, as a rule, contains comparatively few. "They may be numerous in the liver and spleen, and almost absent in the blood of the right ventricle." . . . "They are somewhat more numerous in the spleen than in the liver." Three rabbits were inoculated with spleen pulp stirred up in salt solution without, however, producing any effect. No classification of the parasite has, as yet, been attempted.

The conclusions reached by the author are as follows: "It is essentially a blood disease. There is a continuous or paroxysmal distribution of red blood corpuscles, due to an intra-globular parasite; and the disease results mainly from the incapacity of the internal organs, primarily the liver, secondarily the spleen and kidneys, to transform and remove the waste products resulting from such destruction. In milder cases, the protracted anæmia, which results from the loss of corpuscles, may become the chief cause of exhaustion and death, even when the organs remains pervious and capable of carrying on their respective functions."

Other observers, namely, Billings, of Illinois, and Paquin, of Missouri, consider the disease-producing element to be a bacterium, and both claim to have produced the disease by inoculation. Billings classifies it as a strictly local infectious disease and that only. He, however, does not make use of the classification generally adopted. He describes an infectious disease as one which "*Invariably* finds its origin not in, but outside, of the animal organism, *i. e.*, in the earth, where its microbic cause develops under certain conditions of the climate and soil which offer favorable climatic and telluric influences to its development." The infectious diseases of Billings are the miasmatic diseases of generally ac-



cepted authorities. The germ which Billings believes to be the cause of Texas fever he describes as morphologically the same as the germ which he finds in swine plague. He says: "These two organisms are neither to be classed with micrococci or bacilli." He classifies them as bacteria. He describes them as having a "longitudinal diameter about twice that of their transverse diameter." . . . "They are ovoid." . . . "Their ends are rounded." Like the swine plague germ, he says, they are motile. Inoculation of cultures, he claims, produced the disease in cattle.

It will be seen that the observations of Smith and Billings are quite contradictory. With Smith the bacteriological investigations were negative, but he found intra-organismal blood infection closely related apparently to that found in malaria in man, which is claiming so much of the attention of scientists to-day. Billings claims to have positive bacteriological results, which, he says, he has proven by producing the disease by inoculation of other cattle with pure cultures. I am personally unacquainted with the organism which Billings describes; but through the kindness of Dr. Smith have seen the intra-organismal elements which he describes. These certainly look like the bodies found in the red blood corpuscles of persons suffering from malaria.

Paquin, of Missouri, has done considerable work upon this disease, the results of which were published in "*The Journal of Comparative Medicine and Veterinary Archives*," vol. XI, Nos. 7 and 8. His work is certainly open to very severe criticism. His material was collected in a very loose manner, and under such conditions as to make the investigation of no scientific value. Organs can not be collected in several different places remote from the laboratory where the investigations are to be made, and kept free from post-mortem inspection, even though they be wrapped in cloths soaked in corrosive sublimate solution and immersed in glycerine. Yet Paquin says: "During my trips in Texas and the Indian Territory, September, 1888, I collected soils manures, urines, ticks, livers, spleens, kidneys, bile, specimens from unborn calves, fodders, and waters from various sources on infected grounds. Later, Dr. M. Francis, of the Agricultural College and Experiment Station of Texas, furnished me with a great number of articles of the same order, and later still, Dr. Dinwiddie, of Arkansas, gathered several. 'The specimens of blood, bile and urine were nearly all sealed in glass tubes (pipettes) without being exposed to the air.' He describes several germs which he believes to be different forms of the same organism, and the cause of Texas fever. He inoculated cattle with a modified virus, though it is not very clear how he modifies it, and claims to be able to confer immunity against the disease to cattle so inoculated."

#### TUBERCULOSIS.

This very extensive and fatal disease has claimed a large share of the attention of investigators. Dr. Harold C. Ernst, of Boston, read a very instructive paper before the Association of American Physicians, Washington, September 20th, 1889, entitled "How Far may a Cow be Tuberculous Before her Milk becomes Dangerous?" Dr. Peters was associated with Dr. Ernst in this work. "One hundred and seventeen sets of cover glasses were examined from as many different samples of milk. Of these specimens thus spoiled, twelve turned sour before the examination was completed. These samples were obtained from

thirty-six different cows, all of them presenting more or less distinct signs of tuberculosis of the lungs or elsewhere, but none of them having marked signs of disease of the udder of any kind." . . . .

"Of these samples of milk there were found seventeen in which the bacilli of tuberculosis were present; that is to say, the actual virus was seen in 31.5 per cent. of the samples examined. These seventeen samples of milk came from ten different cows, showing a percentage of detected infectiousness of 27.7 per cent.

"Rabbits inoculated with milk from cow, undoubtedly tuberculous but presenting no udder lesions, resulted in an infection of 10.2 per cent.; in guinea pigs, 28.57 per cent.; calves, 40 per cent."

It was also shown that the milk was infectious by inoculation experiments in 50 per cent. of the cows from which the milk came."

The conclusions drawn by Dr. Ernst are:

"*First*, and emphatically, that the milk from cows affected with tuberculosis in any part of the body may contain the virus of the disease.

*Second*, That the virus is present whether there is disease of the udder or not.

*Third*, That there is no ground for the assertion that there must be a lesion of the udder before the milk can contain the infection of tuberculosis.

*Fourth*, That, on the contrary, the bacilli of tuberculosis are present and active in a very large proportion of cases in the milk of cows affected with tuberculosis, but with no discoverable lesions of the udder."

For the benefit of those who are inclined to belittle the importance of scientific investigations from a practical standpoint, it may be said that Professor Robert Koch made the statement before the International Medical Congress, in Berlin, last month, that as a result of his investigations upon tuberculosis, he had found a substance which has the power of promoting the growth of tubercle bacilli, not only in test tubes, but in the body of an animal. He says, "My experiments are not completed, and I can only say this much about them; that guinea-pigs, which, as is well known, are extraordinarily susceptible to tuberculosis, if exposed to the influence of this substance seem to react to the inoculation of tuberculous virus, and that in guinea-pigs suffering from general tuberculosis, even to a high degree, the morbid process can be brought completely to a standstill without the body being in any way injuriously affected."

I noticed in the telegraphic news from Berlin the other evening that Koch was about to experiment upon human beings affected with tuberculosis.

#### HOG CHOLERA AND SWINE PLAGUE.

You are all aware, doubtless, of the controversy which has been going on with regard to the etiology of certain diseases of swine: As to whether there are two distinct diseases of swine, as described in the reports of the Bureau of Animal Industry; or as to whether there is but one disease, as contended by Billings, which he calls swine plague.

In December, 1889, Prof. Welch published a "preliminary report of investigations concerning the causation of hog cholera." It has been my good fortune to be associated with him in this work for the past two years, and I can, therefore, speak from experience in the matter.

The conclusion has been definitely reached that there are two separate and

distinct diseases, the one known as hog cholera and the other known as swine plague. They are due to separate and distinct organisms, which differ morphologically in their behavior in culture media, and in their reaction when inoculated into animals. It will not be necessary to go into the details of differentiation, as they have been placed before the profession many times in the past few years. Suffice it to say that in this report, while differing in some points from the conclusions reached by the workers on this subject in the Bureau of Animal Industry, the recorded observations harmonized with the facts observed in the investigations of these gentlemen, as reported since the year 1885.

Examination of direct slab cultures from the spleen, sent by Dr. F. S. Billings, proved them to be, in nearly all instances, pure cultures of the hog cholera bacillus. Much confusion has resulted, in the opinion of these investigators, from Dr. Billings' attempt to identify this organism with that of schweineseuche.

#### PLEURO-PNEUMONIA CONTAGIOSA.

Nothing has been done lately, that I am aware of, in the investigation of this disease. The methods employed by the government—that of slaughtering diseased and exposed cattle, and the thorough disinfection of stables—have been so far successful that to-day the disease is thought to exist only in a very limited area around New York City.

Many more observations upon contagious and infectious diseases have been made, but the time will not permit your committee to report further upon them at this meeting.

Pres. Michener: I will call upon Dr. Salmon for the report of the Prize Committee.

Dr. Salmon: Mr. President, there have been no papers presented to me as chairman of that committee, and consequently no prizes to be awarded.

Pres. Michener: I will call for the report of the Special College Committee, of which Dr. C. C. Lyford, of Minnesota, is chairman.

#### REPORT OF THE SPECIAL COLLEGE COMMITTEE.

BY C. C. LYFORD, M.D., V.S., Chairman.

*Mr. President and Gentlemen:*

I sent letters to the different colleges, with a request to answer a certain list of questions regarding the course of instruction they would suggest and the requirements, with a view to establishing a uniform course of instruction. I received from many of them simply their prospectus, and from others I received letters which I will read:

MONTREAL, 5th September, 1890.

*Dear Lyford:*

In reply to yours of August 20th, I beg to say that I have repeatedly suggested what is now proposed, and of course will only be too happy to find that others are working in the same direction.

I have, however, given up any expectation of such a desirable arrangement being arrived at, in Canada, at least.

I beg to suggest that (a) every veterinary school should have a uniform matriculation, examination in writing, arithmetic, including vulgar fractions, reading aloud, dictation, English grammar, geography, and Latin. (b) The curriculum should embrace anatomy, physiology, history, pathology, and pathological anatomy; bacteriology and parasitic diseases.

Chemistry: *Materia medica*, veterinary medicine, and surgery. Diseases of cattle, sheep, and swine (botany or zoology, optional).

(c) That the course should extend over three years at least—three sessions of six months each—which may be subdivided into six sessions of three months each.

(d) That a uniform written examination for the final or pass examination be also adopted.

(e) That uniform fees be charged for the different courses in all the colleges.

Of course, these are my own views only. Before I could subscribe to their adoption I would have to lay them before the Faculty, but I have little doubt but they would be approved by them.

If Chicago and Toronto be got to join in such an arrangement, much good will have been accomplished.

Wishing the U. S. V. M. Association every success in such good work, and assuring you and them of every support and assistance I can give them in the accomplishment of it,

Yours very truly,

D. McEACHRAN, *Dean*.

TORONTO, September 13, 1890.

*My Dear Sir:*

I have just returned from England. In reply to yours of the 1st, I have to state that I do not object to a three-session course, if all the principal colleges do the same, and carry it faithfully out.

I think compulsory practice under a qualified veterinary surgeon during the *greater part* of the *summer vacation*, is preferable to a *summer session*. In Britain a summer session is done away.

You will notice from Annual Announcement sent that students are either required to pass an entrance examination, or present satisfactory testimonials as to education.

In some instances, if a candidate fails, he is allowed (the same as in Edinburgh) to undergo a second examination during the following summer. This, in most instances, has done well; in others, however, the candidates, finding they could not pass their examination, have gone to other colleges, and duly graduated after attending one session.

I have understood that the American Veterinary College curriculum requires three sessions. I find, however, if a student attends one session here he can graduate after attending another session at that college.

Mr. Mitchell, of Indiana, who entered our college beginning of session 1888-9, went to American Veterinary College in October last, and graduated in February. I merely mention this fact (which Prof. Liautard can explain); I am not doing so in a spirit of fault-finding, as I highly esteem both Prof. Liautard and Mr. Mitchell—the former for what he has done for our profession, and the latter as an excellent student and a worthy young man.

One Board of Examiners is impracticable. In Canada every Province has control of all educational matters. You are also aware that some agricultural colleges in your country are granting veterinary degrees, which is quite right when that degree is merely a branch of agricultural science; but such degrees are given to men who intend following the veterinary profession as a means of livelihood. Agricultural colleges are of great value, but I do not know any of them that have proper facilities for the thorough teaching of our profession.

I am sorry I cannot be present at your meeting. With kind regards,

Yours in haste,

ANDREW SMITH.

Mr. C. C. LYFORD, V.S.,  
Tremont House, Chicago, Ill.

PHILADELPHIA, September 13, 1890.

*Dr. C. C. Lyford, Chairman.*

MY DEAR SIR: In reply to your letter of August 20th, I desire to say that our Faculty is in hearty accord with the movement to have the veterinary colleges of this country adopt a common standard of requirements for admission. In this, however, we might add that we could not consent (for our own school) to the adoption of a standard lower than that already adopted by us.

I very much regret that duties here will prevent my being with you at the meeting in Chicago; however, one of our Faculty, Dr. Zuill, will be in attendance.

I remain very sincerely yours,

JOHN MARSHALL.

NEW YORK, September 13, 1890.

*My Dear Doctor:*

Yours of the 7th at hand.

I favor very much a curriculum requiring a three-years' course—a preliminary examination in such branches as one would receive in a common school, and a Board of Examiners, composed of a teacher from each of the various veterinary colleges; that teacher to be delegated by the Faculty or Trustees of the school from which he came.

Yours very truly,

HARRY D. GILL.

TO DR. C. C. LYFORD,  
*Chairman.*

NEW YORK, August 25, 1890.

*Dr. C. C. Lyford, Chairman.*

DEAR SIR: In reply to your note of the 20th, I beg to inform you that I have mailed you this A.M. one of our Announcements for 1890-91, where, I hope, you will find the information desired. I send you this, as I do not exactly see what you desire, and thought perhaps the Announcement would tell you all.

I remain yours truly,

A. LIAUTARD.

NEW YORK, September 10, 1890.

*Dear Doctor:*

Yours is just received. As the questions you ask me to answer are part of statements which I intend to present the Association. I will be pleased to offer them to you on Monday or Tuesday, as I shall be then in Chicago. I can, however say (1) I am in favor of a three-years' course, and (2) I believe I am the *first* who suggested and recommended the establishment of a Board of Examiners. The minutes of the Association and the back volumes of the REVIEW will show my claim to priority. But more later on.

Yours truly,

A. LIAUTARD.

ROBITAILLE, P. Q., August 29, 1890.

*My Dear Sir:*

Your letter of August 20th has just been received by me here. The U. S. Veterinary Association has had for some years now a committee upon "Single Standard" for the various schools, to whose chairman I have from time to time written my ideas concerning the matter; therefore a communication of length from me to you will not be necessary at this time. It would, in my opinion, be very much to the advantage of our profession if all of the American schools advanced their standard to that, let us say, of Montreal. That they will do so, I do not believe. Our art and science *cannot* advance so long as the great majority of its practitioners begin life with eleven months, or less, of study in ungraded schools; and we are the only veterinary profession which asks our public to believe that there is so little in our art.

Yours truly,

CHARLES P. LYMAN.

Professor C. C. LYFORD,  
Minneapolis, Minn.

CHICAGO, August 27, 1890.

*Prof. C. C. Lyford, N. W. Veterinary College, Minneapolis, Minn.:*

DEAR SIR: Before receiving your letter we mailed you our prospectus for the coming session. We do not know if this has given you the information required; if not, please state more fully what you want—whether graduation or matriculation—and oblige,

Yours truly,

R. J. WITHERS,  
*President.*

President Michener: The next in order will be the reception of the report of the Committee on Army Legislation.

Dr. R. S. Huidekoper, Chairman of the Committee on Army Legislation, made the following report:

### REPORT OF THE COMMITTEE ON ARMY LEGISLATION,

BY DR. R. S. HUIDEKOPER, V.S., Chairman.

Your committee has the honor to submit the following report:

After our appointment as a committee on army legislation, at the meeting of the United States Veterinary Medical Association last year, we collected, from all sources, copies of the various bills which had in past years been submitted to Congress on the subject of army veterinary legislation, and were furnished with copies of several new bills containing more or less changes from previous ones. From these we made a digest and outlined a bill asking for the organization of a veterinary department, to be added to the other departments of the United States Army. We asked in this bill for the organization of a corps of veterinarians, to consist of one chief veterinarian, with the rank of colonel; one veterinarian, with the rank of lieutenant-colonel; one veterinarian, with the rank of major; ten veterinarians, with the rank of captain, and twenty veterinarians, with the rank of lieutenant.

This draft of the bill we submitted to General Schofield, to the Surgeon General, to officers of the staff department who would be especially interested in it, and to the officers at a number of military posts both in the East and West, by whom the matter was courteously considered; and we received advice both from older officers, high in rank, and from younger officers, who are at present actively engaged in the practical details of the cavalry and artillery. After mature deliberation as to what was needed, and careful consideration of the limit which we could expect to obtain from Congress, in numbers and rank, for the new corps, we submitted a modified draft of the bill to General Schofield, who still further modified it into a form which would be acceptable to him, and this we gave to the Honorable H. H. Bingham, of Pennsylvania, who kindly introduced it into the House of Representatives, where it was read twice, referred to the Committee on Military Affairs, and ordered to be printed on January 6th, 1890, Number H. R. 3912, 51st Congress, 1st Session.

In the next few weeks we made a number of visits to Washington, and saw individually each member of the Committee on Military Affairs in the House of Representatives. At about that time Senator J. Donald Cameron, of Pennsylvania, introduced the same bill into the Senate. We obtained permission and an invitation from the chairman of the Committee on Military Affairs of the House,

for the commander of the cavalry post at Fort Myer, other cavalry officers, a representative of the medical department, a former staff officer of General Sheridan's—who, under General Sheridan, had investigated the subject of veterinary service—and other officers to appear before the committee, which they did, stating in distinct terms the necessity for the organization of such a service. These officers, unquestionably, exercised considerable weight with the committee. The bill was referred by the Committee on Military Affairs to the War Department for its consideration, and, to our surprise, was returned with an endorsement of the Major-General commanding the army, stating that while improved veterinary service was undoubtedly needed, he questioned the advisability, at the present time, of forming a new department, and adding so many commissioned officers to the roster of the army. Your committee called upon General Schofield, and, at its solicitation, the General was also called upon by members of the Committee on Military Affairs, when we learned that General Schofield was not, as the endorsement seemed to indicate, opposed to the establishment of a more efficient veterinary service, but that, with the large number of other demands which were being made in Congress for the army, he deemed it unadvisable to attempt a service on so large a scale at present, and, by his advice, a new bill was framed, submitted to him, and, with his approval, was introduced into the House of Representatives on March 26th, 1890, by General Joseph Wheeler, of Alabama, under the number H. R. 8638, 51st Congress, 1st Session.

It reads as follows :

A BILL TO PROVIDE FOR A MORE EFFICIENT VETERINARY SERVICE.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled :*

That there shall be, and hereby is, added to the quartermaster's department of the United States Army a veterinary division, which shall consist of one chief veterinarian, with the rank, pay and allowances of a major of cavalry, who may be appointed by the President of the United States, by selection, with and by the consent of the Senate; four veterinarians, with the rank, pay and allowance of the first lieutenant of cavalry, and ten assistant veterinarians, with the rank, pay and allowances of second lieutenants of cavalry.

SECTION 2. That as soon as practicable, after the passage of this act, the President of the United States may appoint a veterinary medical examining board, which shall consist of the chief veterinarian, two officers of the quartermaster's department, and two officers of the medical department, whose duty it shall be to examine such candidates as shall present themselves for examination for appointment in the veterinary division, and shall report and certify to the Secretary of War the names of the candidates who shall have passed the highest examination satisfactory to said board.

SEC. 3. That upon the receipt from the said examining board of the certificates of the candidates who shall have passed the highest satisfactory examination, the President of the United States may appoint to the various offices junior to the chief veterinarian said successful candidates, the said appointees to take rank according to the order of merit certified by said examining board, not to exceed the number provided for in Section 1 of this act.

SEC. 4. That all veterinary surgeons of the United States Army who, at the passage of this act shall be in service, may be granted three months' leave of absence with full pay, for the purpose of preparing themselves for examination.

SEC. 5. That the Secretary of War shall hereafter appoint from time to time a veterinary examining board, which shall consist of the chief veterinarian and two veterinarians of the United States army veterinarian division, to examine candidates for the position of assistant veterinarians, with the rank of second lieutenant and for promotion in the division.

SEC. 6. That promotion below the rank of field officer shall be by seniority, but no officer of the division shall be entitled to promotion thereby until he shall have been examined and approved by a veterinary examining board; and if any such officer fail on examination he shall be suspended from promotion for one year, when he shall be re examined before a like board, and in case of failure on such re-examination he shall be discharged from the service.

SEC. 7. That officers of the veterinary division shall not be eligible for promotion other than in that division.

SEC. 8. That any of the present veterinary surgeons who shall fail to pass the examination required by Section 2 in this act shall be discharged with one year's pay.

The bill was returned to the committee with the approval of the War Department, but was placed upon the calendar of the House by the committee, with still further modifications, which consist essentially of the reduction of the rank of chief veterinarian from that of major to that of captain of cavalry, and the elimination of the word "rank" in connection with the position of the other officers. In the Committee on Military Affairs of the Senate, the matter was under consideration when the modification took place in the House of Representatives, and your committee then deemed it unadvisable to spend further time in the Senate until the matter was settled in the House.

In a letter from General Joseph Wheeler, under date of August 26th, your committee is informed "that the veterinary bill has been reported favorably and will probably soon come up in the House, and it is understood that the Military Committee will have a day, and that we expect to get the bill up." Your committee is assured that the word "rank" will be reinserted by the Military Committee in the Senate, and that after a conference committee the change will be accepted by the House.

At an early period in the winter, and at various times later on, we were informed by officers at the Army Headquarters, by Senators and by Congressmen who were interested in this legislation, that they were in constant receipt of letters opposing the action of your committee, and requesting their influence to check any action being taken on the bills introduced in behalf of the United States Veterinary Medical Association; also, from time to time, other bills, looking toward the organization of a veterinary corps in the army, were introduced both in the Senate and in the House of Representatives. Upon investigation, your committee found that the other bills introduced in the Senate and the House of Representatives, and the opposition to the action of the committee of the United States Veterinary Medical Association, emanated from the same sources. These sources were principally veterinarians now in the employ of the



army, some as veterinarians in the cavalry, and others as contract veterinarians in the other arms of the service. Whether this bill passes the present Congress and becomes a law or not, we are satisfied that very great progress has been made. A live interest has been aroused in the minds of the army officers themselves that an improvement in the system of veterinary service is demanded in the interests of the army itself. Members of Congress have learned that it is needed, and we have the precedent of having carried a bill through the Committee on Military Affairs and placed it on the calendar. For the guidance of your future committees, we feel entitled, as the result of our hard labor, to be competent to judge of what is needed, and we presume to dictate certain courses which must be pursued if any success is to be looked for.

1st. A bill for an army veterinary service must have the approval of the War Department before it will be considered in committee.

2d. The first service established must be a small one, with officers of moderate rank, or it will otherwise incur the natural jealousies of officers of other arms who would be outranked at small posts.

3d. No service will be established which does not demand examination as one of the qualifications for entering it.

4th. The misfortune of any one or more veterinarians previously employed by the government, who might be thrown out by an examination, must not be allowed to weigh one atom as against the good of the whole profession and the better service for the army which could be rendered by veterinarians endowed with the authority with which a commission as an officer would invest them.

Your committee has performed its work with regard only to the good of the profession at large; it would like to have done more, but every matter had to be looked to in person, and numerous visits to Washington entailed not only loss of time, but also considerable expense. We are indebted to a member of the Association, who desires to withhold his name, for a check which defrayed the expense of one visit.

Respectfully,

RUSH S. HUIDEKOPER, *Chairman.*

DANIEL LEMAY,

COOPER CURTIOE, *Committee.*

#### REPORTS OF VARIOUS COMMITTEES.

Secretary Hoskins submitted the report of the Committee on Publication, as follows:

During the year we have issued one thousand copies of the Revised Constitution and By-Laws: 400 copies of Lists of Officers and Members; 500 copies of Lists of Officers and Committees; 500 reprints of all Committee Reports; 500 reprints of Itinerary for Chicago Meeting; 350 reprints of Proceedings of 26th Annual Meeting; 1500 Programs of Meeting.

All these have been first furnished to the members, after which the balance were distributed among members of the profession all over the country. In all about 4000 pieces of mailable matter have been distributed over the country, entailing a vast amount of clerical work. During the year I have completed for the

archives of the Association a complete list of all the members of the Association from its organization and in part completed a history of their connection and what has ultimately become of them. I have also compiled a list of about eight hundred veterinarians outside of our Association, with their addresses, and of what college they are a graduate of. I have issued twenty-two certificates of membership during the Association year, and much other matter of only clerical importance, to the welfare and usefulness of the Association.

President Michener: We will next receive the report of the Special Committee.

Dr. Huidekoper: I think your Committee have nothing to report except progress. We have had one or two meetings, but no action has been taken sufficiently definite to submit to the Association in the form of a report.

President Michener: The next in order will be the report of the

#### SPECIAL COMMITTEE ON TUBERCULOSIS.

Dr. Hoskins of this Committee reported as follows:

Mr. President and Gentlemen: I had expected to find in Chicago to-day a full report from Dr. McLean, but it has not arrived. I can simply state in his absence that we followed instructions and carried the resolutions to Washington, where we were kindly received by the Hon. Jeremiah Rusk, Secretary of Agriculture, who gave us a very patient hearing. We found him in entire accord and sympathy with the spirit of the resolutions and willing to aid us all he could to forward the object set forth in the resolutions.

I am sorry a more extensive report is not present—it must be in Chicago somewhere.

The following was received too late to be read at the meeting:

*To President of U. S. Veterinary Medical Association:*

As Chairman of the committee appointed to present the resolutions anent Tuberculosis, adopted by this society, and to be presented to the Secretary of Agriculture, I beg to report: In company with Drs. Michener and Hoskins, said resolutions were presented, and we were cordially received by the Secretary, and he, through us, begs to thank the members of this society for their interest and promised support in the suppression of a disease having such important relations to both man and beast.

L. McLEAN.

Secretary Hoskins submitted his report as follows:

I have to report that letters and telegrams of regret have been received from several members.

I have also to report to you the resignation of Dr. A. L. Hummel, whose letter I will read: "Please present my resignation to the U. S. Veterinary Association."

I have also, Mr. President, to report to you the death of Dr. G. A. Lathrop, whom we elected one year ago at Brooklyn, also the death of Dr. Alexander Lockhart and Samuel R. Percy, honorary member of this Association.

On motion of Dr. Faust, seconded by Dr. Hoskins, the resignation of Dr. Hummel was accepted.

On motion of Secretary Hoskins the Chair was authorized to appoint a committee of three to draft suitable resolutions on the death of Drs. Lockhart, Lathrop and Percy, which resolutions are to appear in the minutes of this meeting and an engrossed copy of the same forwarded to the families of the deceased members respectively.

President Michener: Since these deceased members were well known by some of our older associates in the East, I should like to appoint as a committee to draft these resolutions, Dr. Hoskins, Dr. J. L. Robertson and Dr. Dougherty as that committee and they will act.

#### REPORTS FROM ASSISTANT (STATE AND FOREIGN) SECRETARIES.

On the call of the roll of States, the following responded: Connecticut by a communication from Dr. George Bridges, as follows:

STAMFORD, N. Y., September 6th, 1890.

*W. H. Hoskins, D. V. S.:*

*My dear Doctor:*—Owing to a long siege of sickness and later a forced rest I have not been able to perform my duty of Assistant State Secretary for Connecticut as I would like. I am here trying to recuperate and consequently will not be able to make much of a report, which I trust under the circumstances you will pardon. I regret very much my inability to be with you at Chicago, but it cannot be helped.

About the 1st of July I sent out printed slips to every veterinarian in the State and nearly all responded. I find our State has its share of contagious diseases and I venture to say that no State in the Union has less provision for enforcing its laws relative to contagious diseases. Indeed, were it not for the voluntary aid given stock owners by members of our profession, the loss to the community would be far greater than it is. We have a flourishing Medical Association, composed of men who are workers and leave no stone unturned to benefit the profession and elevate its name in the eyes of the people at large. We failed in the last Legislature to get any legislation to protect the people from

quackery and ignorance, and I do not anticipate we will be very successful in that line for some time to come, and yet but few people will employ a quack when an educated veterinarian can be had.

It is our intention to try for an improvement on our present laws and better means for their enforcement at the next convening of the Legislature. Glanders are prevalent all over the State and now and then breaks out in some locality or other. Last year an epidemic broke out in the city where I am located and caused a loss of \$10,000 (ten thousand) dollars to horse owners before it was stamped out. Here again I found that the veterinarian was of little account unless some power was given him to act authoritatively; the Humane Society came to my aid and it was stamped out (for the present at least) in this locality. The only power they have is to quarantine, which in itself is after all a good law provided some one was remunerated for enforcing it, and keeping track of it.

PLEURO-PNEUMONIA—None reported—thanks to the good work of the Bureau of Animal Industry.

HOG CHOLERA.—But few cases reported. Farmers have become aware of the importance of isolation and good hygienic conditions, which I think helps keep this disease under subjection; also care in importation plays an important part.

ANTHRAX.—Some five or six cases reported which I believe were in Greenwich, near the border line of New York State.

RABIES.—No cases reported.

TUBERCULOSIS.—This disease is very much on the increase; all report more or less cases and one veterinarian claimed he could take me to cases of it at any time.

The Commissioners of Diseases of Domestic Animals report it far too plenty for the good of the people, and so reported to the Board of Agriculture, but no action was taken by that Board. Last spring Dr. Gardner and myself examined a herd of 67 head and found some 15 affected with tuberculosis. The diseased were separated from the healthy ones. Shortly afterwards they were all sold at auction, after the auctioneer had stated the facts and cautioned the buyers that they bought at their own risk. The diseased ones were bought by a butcher for \$10 per head and the balance were scattered among the farmers, which sooner or later will be heard from.

Not long since, June I think, typhoid fever broke out in Waterbury, and was thought to be due to infected milk. The milk was analyzed by one of the professors of Yale College and found to contain the microbes of that disease. The State Board of Health in July's report stated the fact, claiming it to come from use of milk from diseased cows. I failed to find the cows were examined by any one, and no one could state that the milk did not become infected through some other sources. The usual variety of diseases that equine species is heir to claims our attention.

Typhoid influenza in the larger cities is sometimes very alarming; but this year I believe the death rate has not been as large as formerly.

Trusting you will excuse this report and its mistakes under existing circumstances and hoping you have a successful and pleasant and profitable meeting, I am, yours fraternally,

GEO. BRIDGES.

Dr. Lyford: I had expected here an extensive report from the State Board of Health of Minnesota, but it has not arrived. Last year we had 65 cases in our own neighborhood, but I think it will fall short of fifty this year, though within the last six weeks I have ordered twelve killed and two were ordered killed the 1st of this month.

I have an article here that may be rather too long for the re-

port, though it is quite interesting. It refers to a case the Board of Health called on me to look after, and report as far as possible the cause of an outbreak of tuberculosis.

#### TUBERCULOSIS IN PIGS--CONTAGION FROM EATING AFFECTED MEAT.

BY PROFESSOR C. C. LYFORD, Minneapolis, Minnesota.

On the 15th of May I made the trip to the farm in Anoka County, near Lally Lake, in company with S. D. Brumhall, V.S., and Mr. Parker. There we found five sows who had twenty-nine sucklings pigs from two to four weeks old—which to ordinary observation would be considered in good health. Four of these sows were Poland China, the fifth, a Jersey Red. The latter showed a tendency to cough—though of so mild a nature that it might not be noticed under ordinary circumstances. All of them seemed to eat and feed well, and were in good health, excepting one of the Poland Chinas, which had had nine pigs two weeks before, and was thought to have run down on that account, showing no other signs of disease.

At first it seemed a question as to how it had originated, but upon investigation I found that there had been from twenty-two to twenty-five last spring pigs all apparently in good health, up to January 1st, prior to which time they had run together with fat cattle around farm buildings. During the latter part of December six pigs were sent to their farm some four miles away, the others still run with cattle as before. About the middle of January a steer about five years old became emaciated, the bowels being very loose for some weeks, and a cough having appeared. The animal was almost unable to get up, consequently was killed and thrown into a back yard for the pigs to eat. Upon examination of the steer the foreman of the farm reported that his lungs, liver, spleen and kidneys were studded with indications of tuberculi.

During the month of February three to five barrows became weak, especially across the back, and either died or were killed. The foreman reports to have opened each of them, and in every case found lungs, liver, and kidneys with the same markings as those in the steer. Nothing more was thought of their cases until some two weeks ago (May) when eight hogs, apparently in good condition, were received by DeWitt & Sons, Minneapolis, which were killed and dressed, and in each and every case the lungs, spleen, and kidneys were more or less affected with tuberculi. These were reported having been examined by Inspector Davies, DeWitt and Schwartzkopff. Specimens from the above cases I have for investigation. Some weeks prior to receiving the above shipment, six hogs were brought from the other farm, being from the litter, as before said, which were found in good health, and passed inspection.

I might herestate that we found a seven-year-old cow on the first farm, which had been farrow from the past year, being greatly emaciated and having a severe cough. This Mr. Parker consented to have killed for investigation. This was done and we found her a mass of the tuberculi. Her last calf was killed when a few weeks old for veal, and the cow, said to have taken cold at the time of calving, which took place in a severe storm, was dried up and has since been in

poor health. No other case of the kind has been known to have been on the farm, excepting one some three or four years ago. The other stock is said to be in good health, but I did not inspect them as they were out at pasture. At the other farm a bull is reported as not thriving, they being unable to fatten him. This case, with the other stock, I think should be looked to. It might be well to state that the pigs received little or no milk from the cows on the farm, there being several calves which are said to have taken it all. Some twenty this spring calves were in the yard, being from Herford bulls owned on the premises, the bulls being apparently healthy and from two to three years old.

The five sows before mentioned were allowed to eat the steer with the hogs, and as none of the hogs were free from disease, it is more than probable that the sows are affected with the same. Some sixteen of the suckling pigs have already been sent to the adjoining farm, all of which should be made note of on account of the milk received from the mothers, if they are also found to be suffering from tuberculi.

Wisconsin, Dr. Atkinson reported as follows:

As State Secretary from Wisconsin, I do not know as I fully appreciate what you desire. I do not know that I am competent to make an exhaustive report at this time. In this connection, however, there may be a matter of interest to some. My predecessor was Dr. Rowland, of Monroe; he is probably dead by this time. I mention this as a matter of information to the members of the Association.

So far as our State is concerned, as I said in my letter, I think the veterinary profession is gradually assuming the place it is entitled to hold. During the last year as State Veterinarian, I disposed of sixty cases. We have no case of pleuropneumonia. We have had occasional outbreaks of hog cholera. Our loss from that source is not great, perhaps owing to the local quarantine and the power to enforce it conferred on our Board of Health.

The outbreak of hydrophobia that is mentioned in Dr. Hewitt's report, was on the Mississippi river near our State border. A similar outbreak occurred on our side of the river at about the same time and some six or eight animals were destroyed, although I do not think the diagnosis was verified by any one competent to make it.

We had an outbreak of trichinosis and one death from it in the City of Oshkosh. Trichinosis and tuberculosis prevail to some extent, though not so much in our State as in some others. I am sorry I cannot make a more complete report and I make this from memory in order that the State may not be allowed to pass.

Secretary Hoskins: Mr. President and Gentlemen: I have applications from J. F. Ryan, W. H. McKinney and J. J. Donnelly for membership, all of whom are properly vouched for.

I also have a communication from Dr. Cooper Curtice, of Washington, D.C., which I will read, proposing for honorary membership the name of Dr. Theobald Smith, of Washington, D.C., B.A., M.D., graduate of Cornell University (1884 to 1890)

Laboratory work of Albany Medical College, Bureau of Animal Industry.

I would like to call your attention to one thing which was omitted but which can now be done by unanimous vote, and that was the action of the Association electing to honorary membership the candidates recommended by the Comitia Minora. I would therefore move that the recommendations made by the Comitia Minora as to the names presented for honorary membership in this Association be approved and that they be duly elected. Seconded. On the ballot being cast, the following named parties were declared duly elected to honorary membership in the Association: Prof. J. H. Raymond, Brooklyn, N. Y; Prof. H. M. Biggs, New York City, N. Y.

Secretary Hoskins: Inasmuch as we have lost a great deal of time this morning by reason of the failure of the Comitia Minora to get to work at the appointed time, I move you that the discussion of the reports be postponed until to-morrow morning, and that we now proceed to the election of officers.

Dr. Atkinson: It seems to me a good many members have come to Chicago to attend the Veterinary Association meeting alone. I think much valuable time might be utilized this evening, especially as there is much room for discussion invited in these papers. Therefore I offer as an amendment, that we adjourn until eight o'clock. Seconded.

Secretary Hoskins: We have not arranged for this room to-night, having decided not to hold an evening session.

Dr. Atkinson: I withdraw my motion.

Dr. Williams: We can obtain ample accommodations, without cost, at the Palmer House, if we wish to hold an evening session.

Dr. Atkinson: In view of that statement, I renew my motion, that we adjourn to meet at eight o'clock to-night in the Palmer House.

Seconded by Dr. Butler.

Dr. Williams: I made the suggestion a moment ago, as the manager of the Palmer House had said that he regretted we did not hold our meeting there, as he would cheerfully furnish us a room sufficient for our purpose without cost.

Dr. McLean: With all deference to the gentleman, I would say that some of us have been on the railroad for fifty hours, and I fear we may not be in a condition to appreciate the pleasures of an evening session. We need a little rest.

Dr. Atkinson: I think the members would perhaps rest better in the hall than in the streets of Chicago.

The motion to hold an evening session was lost by a rising vote of eleven for and eighteen against.

The motion of Secretary Hoskins to proceed to the election of officers having been duly seconded, was carried.

Dr. Winchester nominated for President R. S. Huidekoper, of Philadelphia.

Seconded by Dr. Zuill.

On motions to close the nominations for President on a rising vote, there were 22 for and 18 against.

Dr. R. S. Huidekoper was declared duly nominated as President of the Association for the ensuing year.

Dr. W. L. Williams, of Illinois, was nominated by acclamation as Vice-President of the Association, and the nominations for this office was declared closed.

Dr. W. Horace Hoskins was nominated by acclamation as Secretary of the Association for the ensuing year.

Secretary Hoskins: Mr. President and Gentlemen: I have served you now for two years, and the work has grown each year more laborious and important. My professional work at home has also increased, so that I do not feel that I can any longer give the time to the work of the Association which it should receive. I would decline, with thanks, the office which you tender me in favor of anybody else.

Cries of "Question!" "Question!"

The nomination for Secretary was declared closed, Dr. Hoskins being unanimously nominated for that office.

Dr. James L. Robertson was nominated by acclamation to the office of Treasurer.

On motion of Dr. Winchester, duly seconded, the Secretary was directed to cast the ballot of the Association for the election of the officers who have just been nominated.



Secretary Hoskins: In accordance with the authority vested in me, I have cast the ballot of this Association, and the following have been duly elected as officers of the Association for the ensuing year:

For President: Dr. R. S. Huidekoper, of Philadelphia, Pa.

For Vice-President: Dr. W. L. Williams, of Bloomington, Ill.

For Secretary: Dr. W. Horace Hoskins, of Philadelphia, Pa.

For Treasurer: Dr. James L. Robertson, of New York.

President Michener: Gentlemen, it gives me great pleasure to announce to you that you have chosen your officers for the ensuing year, and that you have re-elected to the office of President Dr. Huidekoper, who, we all know, has served the Association well in the past; who, we are sure, has the best interests of the Association at heart, and that he is a man who will probably best represent the Association during the coming year.

I thank you very kindly, gentlemen, for having conferred upon me the honor of being your presiding officer during the past year, and I now very gladly resign in favor of Dr. Huidekoper, who will take the chair.

President Huidekoper: Gentlemen, I certainly thank you for the compliment of my election to this chair. After the address of welcome by Dr. Williams this afternoon, President Michener, in responding to Dr. Williams, said that we had just completed the foundation of the United States Veterinary Medical Association. This Association is to-day holding its twenty-seventh annual meeting. True, it is a very old Association, but, as Associations grow, its progress has not been too slow. For a long time it was, to a great extent, a local organization. The first meetings were held in New York; at that time we held two meetings annually. It was only within the last year that we commenced to go to other cities than Boston or New York; then we held a meeting at Philadelphia, and one in Baltimore. At an early period there was a meeting held at Washington, and a meeting held in Philadelphia, which, however, were accidental. The first meeting attempted to be held in what we sometimes call, the West was convened at Cincinnati, but which, for various reasons, was not a success. Very few men came to

the meeting, and none from the West beyond those doing business in Cincinnati. So this meeting in Chicago is really the first effort that we have made to hold a general meeting in the West. It is only within a short time that we have appreciated the growth of the profession in the West. We were, some years ago, in attendance upon the Cattle Convention here in Chicago, where we met a number of prominent Western veterinarians. Many of the best veterinarians in the East have come here, so that to-day, in meeting in the West, we may say that we have finished the groundwork, the foundation which we have been building for the last twenty-five years, of the U. S. Veterinary Medical Association. We are an organized body to-day, having taken in some forty members, and this meeting makes it, not only in name, but absolutely in practice, the United States Veterinary Medical Association. I am sure from the correspondence I have seen in the hands of the Secretary that he has done an immense amount of work, and has more before him in the future than he has so well performed in the past. I think if you could realize the amount of work that has been done in arranging for this meeting, you would agree with me that we owe him our gratitude. Every man who comes into this Association is a practical man, and cannot but be a benefit to the Association. The young men who have come with us to-day will stimulate the older members to more active work, and in this way the Association should be very successful.

I think there are several things which every member can do to further the general interests of the Association, one of which is to aid in the strengthening of the local organization. In every State, an effort should be made to support the local Association and keep an active society as auxiliary to this Association. A few days ago I attended our State Association meeting at Lancaster, Pa. I made a proposition there that the State Association undertake the formation of local societies throughout the State wherever they have four or more veterinarians in a county, and with these organize a county society. We then made a stipulation to be voted on six months from now, that wherever four veterinarians form a local society, that no one is eligible to the State Association unless a member of the county society. If a man is not fit,

for professional or personal or other reasons, to be associated with practitioners in his own county, he is not desirable as a member of the State Association. I will not take any more of your time. I will give you my best efforts for the success of the Association during the coming year. I think each member can do a great deal to advance the interest in meetings by preparing reports on matters of special interest. It should also be the interest of each member to bring in other reputable veterinarians and strengthen the Association in every way possible.

On motion of Dr. Howe, duly seconded, the meeting adjourned to meet at 9 A.M. September 17th, 1890.

## SECOND DAY.

The meeting was called to order at 10 A.M. Wednesday, 17th, by President Huidekoper.

The following named members responded to the call of the roll by Secretary Hoskins:

Drs. Adair, Atkinson, Barron, Bemis, Butler, Clement, Crago, Dougherty, Wm. Eves, Faust, Faville, Hoskins, Howe, Huidekoper, Lemay, Liantard, Lyford, Marshall, Meyer, Sr., Meyer, Jr., Michener, McLean, R. A., Paquin, Rayner, T. B., Rayner, Jas. B., Robertson, J. L., Salmon, Turner, Trumbower, Weber, Michener, Zuill. New Members: Griffin, Thompson, A. K., Armstrong, Stewart, Carey, Kidd, Williams, Schriber, Kennedy, Baker, S. S., Sayre, Barber, A. H., Hughes, Withers, Walter, Meyer, Jno. S., Piatt, Ronif, Hawkins, Shaw, Hollingsworth, Edwards, Phillips, J., White.

President Huidekoper: The Chair will announce the following committees:

BOARD OF CENSORS.—Dr. W. J. Coates, New York, Chairman; Dr. J. F. Winchester, Mass; Dr. R. A. McLean, N. Y.; Dr. Tait Butler, Iowa; Dr. Thomas B. Rayner, Penn; Dr. C. C. Lyford, Minn.; Dr. William Dougherty, Md.

COMMITTEE ON INTELLIGENCE AND EDUCATION.—Dr. Austin Peters, Chairman, Mass.; Dr. Withers, Ill.; Dr. P. Paquin, Mo.; Dr. N. L. Zuill, Penna.; Dr. Gerald E. Griffin, Ind.

COMMITTEE ON FINANCE.—Dr. Charles Burden, Chairman, N. Y.; Dr. D. J. Dixon, N. J.; Dr. E. C. Ross, Conn.

COMMITTEE ON DISEASES.—Dr. Tait Butler, Ia., Chairman, Dr. Charles B. Michener, N. Y.; Dr. James L. Kidd, Ky.; Dr. James A. Waugh, 6th U. S. Cav.; Dr. George Bridges, Conn.

COMMITTEE ON PRIZES.—Dr. D. E. Salmon, Washington, D.C., Chairman; Dr. Dixon, N. J.; Dr. E. C. Ross, Conn.

SPECIAL COLLEGE COMMITTEE.—Dr. C. C. Lyford, Minn., Chairman; Dr. C. S. Breed, Mass.; Dr. A. W. Clement, Md.

COMMITTEE ON ARMY LEGISLATION.—Dr. W. B. E. Miller, Chairman, N. J.; Dr. D. Lemay, Kan.; Dr. Cooper Curtice, D.C.

COMMITTEE ON PUBLICATION.—Dr. W. Horace Hoskins, Pa., Chairman; Dr. C. J. Goentner, Pa.; Dr. S. E. Weber, Pa.

SPECIAL COMMITTEE TO CONSIDER PLAN FOR CENTRAL VETERINARY BODY.—Dr. C. P. Lyman, Chairman, Mass.; Dr. James L. Robertson, N. Y.; Dr. G. H. Bemis, N. Y.

President Huidekoper: The next order of business is the discussion of committee reports. The first in order will be the discussion of the report of the Committee on Intelligence and Education.

As it appears no one cares to discuss that report I will call upon Dr. Dougherty to submit the report of the Financial Committee.

Dr. William Dougherty, Chairman of the Finance Committee, submitted his report as follows:

We examined the Secretary's papers and vouchers last night and submit the following report:

Collection of initiation fees and dues for year, per statement.....	\$581.50
Expenses during the year, \$544.69, made up of the following items:	
Secretary's expenses, postage, express, etc.....	\$71.34
Appropriation and deficit, 26th annual dinner.....	92.00
Committee expenses.....	121.00
Committee of Arrangements, Chicago meeting.....	16.50
Secretary's salary, one year.....	100.00
Stenographer's charges, Brooklyn meeting.....	15.00
Printing expenses, Publication Committee.....	121.60
To insertion twenty-seven names in certificates.....	6.75
	\$544.69
Balance,.....	\$36.61

[Signed] WILLIAM DOUGHERTY, W. L. WILLIAMS.

President Huidekoper : Gentlemen, you have heard the report of the Finance Committee and if there is no objection, the report will be received and approved as read. There being no objection it was so ordered.

#### DISCUSSIONS OF THE REPORTS OF VARIOUS COMMITTEES.

President Huidekoper : The first subject for discussion is the report of the Committee on Diseases.

Dr. Paquin : Mr. Chairman and Gentlemen : It may be that I have not the right conception of what ought to constitute the reports of this Committee. I have thought that one of its chief elements at least ought to be justice. It ought to deal fairly with all the questions it attempts to consider. If it mentions anybody connected with any work, it ought to mention them all equally, or at least tell the whole truth about it.

The report that has been submitted to us on contagious diseases, rather consists chiefly in explanations of what one gentleman has done in investigating Texas fever. A large portion of the many pages in the report refer to the good work done by Dr. Smith at Washington. Every strong point is stated with fairness and exactness, but when it comes to compare that with the work of other men, the report glances over the other work, omits entirely much that is worthy of consideration, and then makes an unfair comparison. I submit, gentlemen, if a comparison is to be made, it ought to be impartial. If there is to be merely a comparison of these investigations of Texas fever they ought to be full and complete of all the work that has been done, and not the opinion of the gentleman who framed the report. I do not understand this Association to be organized for the purpose of discussing one-sided views. I do not understand that reports ought to be based on opinions, but on facts. If I am correct in my opinion, this report should have presented all the facts that have been developed by investigation. I do not object to what has been said concerning the important work of Dr. Smith. It is very important that the investigation he has made be given to this Association ; but what I do object to is the unfairness with which comparisons have been made.

You may perhaps pardon me for speaking of myself, but in this connection I presume I will have to blow my own horn. Now, we have made some investigations of Texas fever and a bulletin has been published. We do not claim it is perfect, for we know there are many imperfections in it and are satisfied that we will find many more errors, but all these will be corrected. We have attempted, however, to give the facts as we have found them.

Great stress was laid in the report of the Committee on Diseases on the causation of Texas fever or the germs of Texas fever. The judgment or opinion is based on perhaps half a dozen cases. We in Missouri perhaps do not know about much about Texas fever, or in Texas, Arkansas or Indian Territory, where we see only a few cases. No men may be as well informed as the gentleman from Baltimore, where they have seen a few cases in two or three years. But in the Southwest we have this advantage, that when we have cases of Texas fever we can diagnose it whether it is produced by inoculation or come from natural causes. This much is certain, that we know Texas fever when we see it. The gentleman has alluded to our work simply as our claim—that we have simply claimed things that probably are untrue. I do not claim to say that we have absolutely discovered the germ of Texas fever, whether it is bacteria or the precise form of the germs. We have not classified it. We have simply said there is a microorganism as the causation. These germs have not been found by myself originally, but are the same that were seen by Dr. Salmon himself and described by him some years ago.

It has been said that our work counted for nothing because we sent to Texas and Arkansas and Indian Territory and there gathered specimens. I want to know if it is impossible to gather specimens in that line entirely perfect and clear of any outside influences. It is just as possible to go to Texas with an alcohol lamp and gather bile perfectly pure as it is in the laboratory which is full of floating microbes. It is a possibility. If it is impossible to do that in this country, how is it we can have virus sent from Europe, gathered in the field and not in the laboratory? We cannot have all these cases in the barn. We have got to take them where they are. But suppose it was true that all the work done

in Texas in the field, the specimens sent to us were all impure, what about those cases we have had under our eyes, and watched from the beginning every step of the disease and gathered specimens as pure as it could be done at once? I do not claim absolute perfection, but we have worked with sincerity and with exactness, desiring to be of service to the medical profession, not working for ourselves or for our own glory. We have been honestly striving to clear up some mysteries concerning Texas fever and not trying to create the impression that we were great investigators.

But if we assume that all we have done, so far as the germ itself is concerned, is incorrect, there is still something that should have been noticed if this question was to be considered at all, and that is, some of the questions relating to Texas fever, outside of the germs, outside of the actual causation. I mean to say that there have been points brought out by our investigations that undoubtedly shed more light than ever existed before on this subject of the germ of the disease.

The Chairman of the Committee on Diseases, as I say, has presented a strong point of the gentlemen who have studied Texas fever in Washington and has merely given the weak points of our investigation. He has laid much stress upon his opinion that Texas fever in cattle is similar, if not identical, to malaria in man. If he meant by that that Texas fever is just like malaria in man, or something like it, I believe he is greatly in error. In the first place, malaria in man is not taken from one State to the other. You can go to the Indian Territory or Missouri, where they have malaria and then go to the North, and our children and families do not take it. Texas cattle feeding on infectious ground, taken North, communicate the disease so that native stock exposed to it die from Texas fever. There is certainly this difference so far as the actual nature of the disease is concerned. It may be true that the two germs referred to are somewhat alike, but as to the nature of them and the method of transmission of the disease there is certainly a great difference.

Some statements have been made to this effect which are so vague as to hardly justify a reply.

We have made inoculations with as much care as could be done,

and there are gentlemen in this room to-day who have seen cases of Texas fever produced by inoculation, from native to native, that has produced death. That is a possibility. I have never known such to occur in malaria.

Another point worthy of notice in Texas fever, which was entirely ignored, with a view to casting a reflection on everything we have done, is the agency in which the virus is transmitted from the South to the North. The gentleman has omitted to state that in Dr. Smith's work he says, "I do not know yet in what agency the virus is transmitted to the North, and we are yet in ignorance of that fact." Farmers in the Southwest have known for years that some agency could bring Texas fever to the country. They have known that urine alone could transmit it. They have known that manure alone could do that, and our experiments have simply confirmed this opinion. We do not claim to be the first in that discovery.

Now, gentlemen, I submit to you that if this question was to be brought before this Association it should be discussed fairly; there should be no partiality. I am not alluding to anybody personally, but generally I consider this report unfair to myself, and therefore have made the explanation.

DR. A. W. CLEMENT: Mr. President, as Chairman of this Committee, it has been my endeavor to review the work as impartially as possible from every standpoint.

I happen to have been very much interested lately in malarial diseases. From reading Dr. Smith's report it occurred to me that Texas fever might be closely allied to malaria; and in making this report I laid special stress upon those diseases which I thought might be of miasmatic origin. It was certainly not my intention to be personal in the matter, and I do not think I can justly be accused of such. But every man's print is public property and is liable to criticism. In dealing with these things I have gone into them as closely as possible, but it would take the entire time of this meeting if every detail was to be fully considered. I simply remark that from a review of Dr. Smith's work in connection with malarial diseases, I thought that the germ of Texas fever closely resembled that found in malaria. I do not pretend to de-



fine the difference, as I have not investigated Texas fever myself to any extent. I have seen very little of it and that from a laboratory standpoint.

It was a very disagreeable duty, of course, to criticize the work of Dr. Paquin. I have known him for a long time, and have thought a great deal of him and appreciated his work; but when a man puts into print such opinions as he has advanced, as chairman of this committee I could not overlook it. It certainly is not regarded according to the methods of modern bacteriology to collect specimens in the field and have them carried as far as he has done. It is absolutely impossible, in the opinions of those who are authority on the subject to prevent, the organisms of many varieties. He says in so many words that they have found several organisms in Texas fever, all of which he considers different forms of the same organism. He described bacilli and rods, much longer than they are wide. He describes oval organisms and round organisms and so many varieties which differ essentially from each other, that it seems impossible that they should be in any wise related. He says that he has produced Texas fever by inoculating these organisms, but he does not say what the organism is: That he produced it by inoculating several organisms. For that reason I say that his work is not such as to be considered scientific. He says he has conferred immunity upon cattle by inoculation, but he does not say how he has modified his virus, and in that respect his conclusions are not clear.

I do not know of anything more I can say only that if I have done him an injustice I am sorry, as it was the furthest thing from my mind. As I say, such a work I do not consider to be of any practical value, and I do not know how I can answer it any more definitely.

DR. PAQUIN: If you will allow me one more word. I did not mean that the gentleman intended any personal injury, or anything of the kind.

Dr. Clement has said that it is impossible to carry virus without putrefaction. Of course if you leave it open it is impossible, but suppose you seal it? Suppose you take gall or take the bile, and with a sterilized pipe seal it up before it has any chance of con-

tamination? Cannot that be carried without putrefaction? Certainly it can. We have some two or three years old that is still kept without putrefaction. If the material be gathered perfectly pure before contact with the air and then promptly sealed, it is possible to carry it any distance. And that is the way our material is gathered. This gathering of the material was simply part of our work. We are still experimenting and if any discoveries are made we will state them.

I have not attempted to give any method of modification of the virus, as I have not modified it at all. If a germ of Texas fever is passed through Northern cattle, it will produce fever of the same symptoms as Texas fever, the same effect in the blood corpuscles. It is already modified by nature, and it is not necessary to modify it by any mechanical processes. So it is possible to produce it to some extent, and we can produce immunity for a while simply by virus taken from one of our own cattle suffering from the disease.

On the question of immunity I have one more word. If the disease were of the nature of malaria, how could we explain on that theory the fact that Southern cattle are immutable against Texas fever? How can we explain the fact that the cattle of Texas always exposed to the infectious soil, are immuned? By what possible method do they become immuned? How do they gain that immunity? We take Northern cattle to Texas and within ten days in the summer months they die of Texas fever. We take Texas cattle to Northern pastures and in thirty, forty or fifty days in our pastures they die of fever. But you take the calves born on Texas soil and constantly exposed to this germ, very few die of Texas fever. Take these same cattle North for three months and return them to the South and they will take Texas fever and die from it. If that is the fact, these cattle must have had immunity by some method on the Southern soil which they lost on the Northern soil. After losing it on the Northern soil, they die of Texas fever. That is not an experiment. I have seen it myself time and time again. Now then if this immunity is gained it must be through some kind of virus. I have found that the Southern cows so far as our experiments go are somewhat affected, or at least contain in their blood at some time or other,

a parasite that can be detected by microscopic examination as has been explained by Dr. Smith. It may be outside the blood corpuscles, it may be contained in the liver, in the bile of calves born from those cattle, which calves must naturally be vaccinated from their mothers, when they are born on Southern soil, yet they have been able to resist the germ on the Southern soil. It must be this immunity is conferred by principle, and it is on that principle we have been working. We have been trying to find out by what principle immunity is conferred and if we could find that out it would solve the whole question of Texas fever; and therefore, gentlemen, we have tried to be honest in this matter. Our methods have not been perfect, perhaps; but we have not lost any specimens by putrefaction.

Dr. Salmon: I think in justice to the investigations that have been made in the Bureau of Animal Industry, if not from the point of justice, at least from the point of making an explanation in regard to our work, that it would be proper for me to say a few words at this time, although I shall cover the subject of Texas fever in a paper I expect to read to-day.

I regard it as unfortunate that there should be so much feeling between different investigators in the same field of work. There is room enough for all of us to work and surely enough to be done, and the important question connected with these diseases will be solved none too soon if we all work and strive together to throw what light we can upon the subject. As far as I am concerned, I feel no jealousy in regard to the work of Dr. Paquin or any other investigator, and I should feel great regret if I knew there was any such jealousy in regard to my work, because I appreciate the importance of all working together. We will naturally get some different results, but when we come to put those results together and study them and draw our conclusions we will probably see that each from its standpoint, from his method of work, is able to throw light upon the problem which we all desire so much to understand.

The subject of Texas fever is undoubtedly one of the most difficult problems that investigators in this or any other country have ever attempted to solve. It is a disease peculiar in its character-

istics. It is surrounded with something of a mystery which cannot be understood from our knowledge of other diseases. Therefore when we work upon this disease we are to some extent in the dark. We have not the light of other investigators to lead us in solving the different questions which come up.

Another thing which is important: We claim in our investigation that by cultures which we have made in recent years we have been unable to get any growth, any germ whatever in our cultures. Others claim they have been able to get cultures. The methods are somewhat different. It is for those who look over these investigations and study them, who endeavor to understand the nature of the diseases, one worker get cultures and another cannot. Dr. Paquin spoke of Dr. Smith's work, or Dr. Clement's conclusion from it rather, and he throws out the insinuation that the material which we have had and studied has been very limited. This is a mistake. For four years we have studied that disease during the whole season in which it exists. We have brought cattle to our experimental station from North Carolina, where the Texas fever is prevalent, and we have put them on our experimental stations and have produced as many cases as we could possibly study during one season. We have had another advantage over Dr. Paquin in that we have had more men to help us in this work. We have had several men in the laboratory to keep our cultures—to make our cultures, we have men to make our microscopic examinations, and we have had men at the experimental station to watch the animals and observe symptoms. We have so divided our force as to get as much assistance as possible from the different workers. Therefore I claim we have made as many observations and as carefully as it was possible to make from any one point of work.

Now I want to say a word in regard to germs. Dr. Paquin has been extremely liberal in his remarks in regard to the discovery of the germ of Texas fever, even giving me credit for having discovered the germ years ago, which I described in a report to the Department of Agriculture back in 1880. That was the form of germ which he also described. Now, I must disclaim any credit for the discovery of this germ which I described at that time; and

it can have no possible connection with the germ which Dr. Smith has described. If you will read my report you will remember I do not claim that that germ was the cause of Texas fever and did not at the time I described it. I carried on my work at that time as some of Dr. Paquin's work has been done. I was obliged to work at long distances; I did not have as good a laboratory as I have now; I was obliged to gather my material in the field and seal it up in tubes and carry it some hundreds of miles to my laboratory and there work it out. Our work in Washington has been very different. We have had stations close to the laboratory. We have had every facility for communication between station and laboratory. We have had all the material which we could possibly work, so that I think, as far as the observations of our Bureau go, they have been carried on under conditions which make the results fully trustworthy and as reliable as it is possible for such investigations to be.

Now one word more in regard to the germs. I do not consider it possible that the bacteria, the germs which have been described by Dr. Billings and Dr. Paquin and by myself in early investigations—they certainly were bacteria—I do not consider it possible that those germs can be confused with the micro-organism which Dr. Smith is working on at present. They are found in different locations. The bacteria are cultivated and they do not resemble one another in the least. So, so far as I am concerned, I am ready to say those investigations are entirely different and the germs differ from the germs which Dr. Smith treats of, radically. So I see no reason for any confusion. So we must conclude that the germs discovered by the Bureau of Animal Industry are entirely different from these germs we have been working with.

Now, there is one remark which Dr. Paquin has made which I would like to say a word about. In inoculating from material of dead animals he gets certain results, and in certain cases produces death. Now, the question is, Have you produced the disease which you supposed was contemplated, or have you produced a different disease by the peculiar germs which you have inoculated? This is a point which some of us may not have realized. I know in

my own early investigations of Texas fever, where I got most decided results by inoculation, that these results were not, as I supposed, Texas fever, but they were the result of inoculating with organisms which produced a malignant type of a different disease. So if you are going to diagnose diseases to-day of the nature of Texas fever, you must know what the germ is, and you must be able to recognize the germ when you see it, without the possibility of confusion with other micro-organisms; and then when you examine the liquids or the tissues of the affected animals, you can ascertain positively whether your animal is affected with a particular organism or not. So long as there is confusion in regard to the nature of the germ of Texas fever, so long must there be uncertainty in the diagnosis. When we find this peculiar parasite in the red blood corpuscles of animals, we feel sure that it is diseased. We have not studied any of the diseases of animals in this country in which there is any such micro-organisms found in any such location as that. If there is a germ in the bile as well as in the blood, if there is a germ found in the tissues, in the nature of a bacteria, he is uncertain whether that germ is what I described in 1880, or they are the bacilli or bacteriæ which Dr. Billings discovered—the short bacillus, more lately, or the long bacillus. Then there must be doubt in regard to the diagnosis of the disease, no matter how carefully investigations are made.

At present, when we diagnose a case of Texas fever, there are two points we take into consideration, and we feel sure if we find those points that we are working with one and the same disease: one is the presence of this germ in the red blood corpuscle, and the other is the rapid diminution of the corpuscles themselves. Dr. Paquin is certain, he says, that he can diagnose Texas fever, but he does not tell us how he is certain. He does not describe definitely and distinctly the germ which he asserts he finds in one of the animals affected with Texas fever, and in the young calves as soon as they are born, or before they are born, from Texas mothers. I think that is an important point which Dr. Paquin should have brought out clearly and distinctly if he expects any scientists to accept conclusions of so much importance and so far-reaching as those which he has set forth in his report.

Dr. Paquin also tries to point out weak spots in the conclusion of Dr. Smith that Texas fever is a disease of the nature of malaria. One of his points is that malaria is not transmissible from one point of the country to another, while Texas fever is. Now, I do not think any conclusion should be reached from two facts of that nature. In the first place, a bacterial disease of one kind may be carried to another part of the country and spread among animals of the same species, while another bacterial disease may be carried with greater difficulty, if at all, so that one disease may be carried and another closely allied might not be carried. And we must consider the fact that there is a great difference in the exposure of people as with cattle. We can expose northern cattle to southern cattle if there is simply a little difference between them, and in a great majority of cases they do not take Texas fever. People are exposed to each other in somewhat the same way. Cattle have another method of contracting infection which people do not have. Cattle go upon pastures, and they eat food from the ground which has been soiled by the excretions of southern cattle. There is no possibility of people contracting the germ in this way. So I think that facts of that kind simply support Dr. Smith's conclusion. He does not claim, and I do not claim that the diseases are identical, but that the micro-organisms which causes Texas fever are closely allied to those found in malaria. Now, just one other point to which I ask your attention for a moment. Dr. Paquin says Dr. Smith is not certain how the disease is conveyed from southern to northern animals. Dr. Smith states this in his report. He says the farmers of the country are certain how the disease is transmitted from one animal to the other; that they know these germs are, and that they may be, transmitted by the manure and by the urine. I doubt if we can accept such conclusions as that. How do they know it when those who have investigated the subject are not able to tell certainly? I do not believe any man—I do not believe Dr. Paquin can get up here and say he is sure that the disease is transmitted to southern cattle through the medium of the manure scattered on the pastures. I do not believe he can point to any positive evidence where Texas fever is spread by means of the urine and manure cast upon the

soil. That question is obscure, upon which we have no definite evidence that I have seen, and which, I think, we can very well leave to be decided by investigation in the future, rather than jump at conclusions before we have evidence on hand to justify them.

Dr. Paquin: Just another word. I am glad to see the spirit of discussion, as it is exactly what I wanted. I will reply to Dr. Salmon's last question by stating two experiments, or two series of experiments with urine and with manure. Pens of about twelve feet square and six feet high, where there had been no Texas cattle at any time, were prepared. On the grass of those pens was spread manure in some of them and infected urine in the other. We exposed northern cattle to that grass, and we produced Texas fever. We had not only one case, but several cases from the two different pens, and from the two different kinds of infection.

Dr. Salmon: Let me interrupt you just a moment. What the doctor stated before was that the farmers of Missouri had been perfectly certain for years that the disease was produced by manure and urine.

Dr. Paquin: I said that they were sure there was some method of transmission. As to the inoculation and the diagnosis of the disease, I beg to say this, that it is possible take a spleen or a liver of a diseased animal suffering from Texas fever, make a fluid of it, and inoculate another northern animal, and produce the disease, and in the blood corpuscles you will find the organisms as Dr. Smith has stated.

Dr. Clement: I would like to say a word. The basis upon which I criticised Dr. Paquin's work, as I said before, is the fact that he found so many germs which he considers as the cause of Texas fever. There must be one germ. You cannot have Texas fever caused by several different organisms. Dr. Paquin says: "Some of these bodies appear almost spherically; others, like bright specks, and others like oval bodies." He says the germs were found in the blood and bile frequently. Now, he says this blood can be taken and carried perfectly pure. The fact that he found so many different germs in his blood and bile is very conclusive evidence that it cannot be carried perfectly pure.



Dr. Paquin : Do I say so many different germs, on different forms during the growth ?

Dr. Clement : In another place you say you classify them.

Dr. Paquin : I do not say I classify the germs.

Dr. Clement : You cannot have a disease, producing virus of several different forms and call one bacillus and leave the rest unclassified. That is the basis upon which I made my criticism.

Dr. Salmon : Just one word. I do not know that Dr. Clement has any means of knowing exactly what Dr. Paquin has seen except from his report. It may be Dr. Paquin is unfortunate in the way his report is written. Certainly from reading that report I can find nothing that would lead me to suppose that the doctor ever saw a micro-organism in a blood corpuscle such as Dr. Smith described. He does speak of its being found, but he does not give a description of it. He speaks of it being an oval germ. So from reading his report the only conclusion I could reach was that the germ which he studied was bacteria. I do not see how it would be possible for him to study this germ of ours in the red blood corpuscle. It is only by the peculiar appearance of this germ in the red blood corpuscle that we are able positively to distinguish it. After reading this report of Dr. Paquin's I certainly reached very definite and positive conclusions in my own mind as to what he had seen. I do not see how it is possible for him to have studied the germ which exists only in the red corpuscles. I do not see how it is possible that he should have described the germ which is found also in the bile and other places where there are no red blood corpuscles. We only pretend to recognize the germ when we find it in the red corpuscles.

Dr. Griffin : If I inoculate an animal with the germ and it gets a disease, would it be in the urine ?

Dr. Salmon : It is a question of the recognition of the germ. Without a description of the germ, we do not know what investigators have been working at.

Dr. Adair : If the germ that causes the disease is only in the red corpuscles and not in the urine, and you inoculate with the urine and produce Texas fever and the post-mortem shows the symptoms, do I understand the germ would be discovered and the disease diagnosed by the red blood corpuscle ?

Dr. Salmon: What I said was, I could not undertake to recognize the germ outside of the red blood corpuscle because of the peculiar characteristics of it. We think it cannot be seen outside of it. I do not say it is not in the urine and in the bile, but I do say that the gentlemen who have studied it in the West have not given us any definite description of it so that we could recognize it outside of the blood corpuscles. It may be that they have produced the disease in the way they say, but I question the diagnosis. How do you know? What were the germs which you produced? Give us a definite description of them, and then we will accept your conclusion. Until you do this we must proceed to further investigation, and at least conclude that the subject is in doubt.

Dr. Hawkins: Before closing this discussion, I would like to know whether the germ of this disease is destroyed entirely by the cold weather. Several years ago, while practicing in Canada, we had Texas fever in a herd that was brought in there by some cattle that had been unloaded on account of an accident. The next season we had a breaking out of Texas fever on the same farm, but not having any Texas cattle or any that had come in contact with Texas cattle on the place that season, it seemed strange. I have understood that the cold weather would destroy this germ.

Dr. Adair: What time of the year was this accident?

Dr. Hawkins: The latter part of August or the fore part of September. The fever broke out the next year about the same time.

Dr. Winchester: If the subject of Texas fever has been thoroughly discussed I would like to make a statement in regard to tuberculosis. If my memory serves me right, at the conference at Berlin last month Dr. Koch made a statement that he thought he had found something that controlled the action of the bacillus of tuberculosis in animals, and also that something was written and put in a sealed letter given to the Academy of Medicine, at Paris, some twelve months before Koch made that statement, by two Frenchmen whose names I do not recall. I only make the statement to show that the same investigation had been held and the

same results produced twelve months previous to Koch's making his statement in regard to that, held in abeyance the activity of the virus.

Dr. Liautard: I may add to that statement made by Dr. Winchester that in the statement made before the Academy of Medicine in Paris, it is claimed that by inoculation they had so far obtained these results that animals which had been inoculated with the strongest virus of tuberculosis, had been kept after the inoculation for a number of months free from the disease, while others which were vaccinated had died in a very short time.

Dr. Salmon: I think these gentlemen were working on entirely different subjects. It seems to me what I have seen of the article, although they are both written in such a way as to mystify, that Dr. Koch had been working in one direction and the French have been working with some substance to produce immunity. I judge that they had been working with some materials in which the bacilli had grown, while Koch states in his paper that he has discovered a substance which, given to the animal, prevents the further growth of the germ in its tissues. All the indications are that these investigators have been working on different lines. Most of them have failed in producing what they claim to at present, but their investigations will be of benefit to the medical world.

Dr. Clement: In quoting from the article, I simply made the statement that Dr. Koch said he had found the substance. He did not describe it and he was not prepared to say just at present what it was.

President Huidekoper: The next subject for discussion is the report of the Special College Committee.

Dr. Lyford: I will say that I have received another letter from the New York College, in which they report progress. I might say that I have received letters from all the colleges except the Chicago College, and each of them so far are not only willing but apparently glad to enter into the three years course, and none of them find fault with the preliminary examination. Thus far the reports are quite encouraging. I have not made a report of the agricultural schools, or consulted them, as I thought that would

be of secondary consideration, as most of them are hardly prepared for such a course. I have thought if we first succeeded with the regular veterinary colleges, we could probably work the others in easier. I should be very glad to hear from the other schools ; and as we have Professor Liautard's report and as he himself is present, we will probably get some new idea from him as to his work in this line.

Dr. Liautard: Mr. President and Gentlemen: This is a very important question. The fact that it has been brought before the Association for a number of years shows its importance. It has made some progress, although it has been slow ; undoubtedly a good deal will be developed in time. There is no doubt but that a long course of study is a necessity and that it will impose itself as veterinary science progresses in this country. I will say this, that the requirements for admission, matriculation, etc., were initiated by the American Veterinary College, being the first institution in this country which required it. From the moment this institution was opened we required a matriculation examination, because we felt that our men are engaged in scientific professional work. It was necessary that we should have everything as clean as possible. What was the condition of matriculation previous to 1875 in the veterinary school ? Why, a gentleman came in, paid his fee, looked at us for a short while, unable to follow our lectures, unable to follow the progress he was making, unable to take notes, or perhaps in some cases unable to write them. He remained a little while, went away and concluded we had robbed him of his fee. We could not refuse him. He had complied with the requirements, merely paying his fee and yet we know we were not doing justice to that class of men. Then we started this matriculation examination as I say, the first one I believe in the country in a veterinary college, and I am strongly inclined to believe the first in any medical college in the State of New York. We started it so that the student might be able to appreciate the course of instruction and be benefited by it. This preliminary example is simple ; it is not probably what it ought to be. It is not yet up to the standard of some of the other schools, but probably will come there.

As to the question of a three years' course, I believe we are to consider the fact that at first there was not a veterinary high school in this country. The most important point was to try and displace the ignorant man with good practitioners and give those men a good foundation—what might be called a veterinary A. B. C. for their own personal benefit. It is for this reason that the American Veterinary College stuck to those requirements. We have inaugurated a change, as you have been told by Dr. Lyford. We have lengthened our course from four and a half to six months. We have not yet reached the three years' session at college, but we have required a more lengthened course of study—three years. The day will come, I believe, when it will not be a question of ordinary attendance in school, but rather one of the thorough education of those students who are to come to our schools. I can say as a result that the students in our colleges to-day are better educated than those in the past. The students feel that by a long course of lectures they are benefited and rendered competent for the discharge of practical duties.

As to the question of examination, it is one that will have to be considered by and by. I am certainly not in favor of an examination by each individual school. Already, as I wrote Dr. Lyford, although he has probably not yet received my letter, I have considered the subject of a general board of examiners as a very important step. I have considered the subject also in some of our meetings and I am strongly in favor of a board of examiners, but I must say if we are to gain any benefit by a board of examiners, we must so arrange it that the individual school would not be tempted in the matter, and therefore if that board of examiners is to be established, it should be under the control of this National Association, representing every part of the country, and in this way I think we could accomplish much good. Let your examinations be careful and impartial to every one of the candidates, whether from the Eastern or Western colleges. (Applause.)

President Huidekeper: We will now take up the discussion of the report of the Committee on Army Legislation.

Dr. Griffin: Mr. President: I take this opportunity on behalf of the majority of the army veterinarians to thank the committee

for their work in our behalf. The report mentions the fact that the plan meets with opposition from members within the service. This must be expected where we have three men who are not graduates of veterinary colleges, and who upon the passage of a bill creating the corps, and compelling the members of the present force to pass an examination, would be thrown out of their employment. Those three men are strongly opposed to any reform. I am sorry to say also that there is at least one other man who is a graduate of a very reputable veterinary college, graduating some ten years ago, and supposed to be a man well educated, yet who fears that in case of an examination he would not be able to pass. This man is exerting all his influence to obstruct progress of your committee on army legislation. There are only fourteen of us altogether in the service, and out of this number I believe there are about six who would fail in the examination, and those men of course oppose any bill that tends to reform the service.

The inducements for entering the army are not great, which is the reason why we have such a poor class of men in it. This is the state of affairs and shows you where the opposition comes from. I think it is certain that the competent men in the service, who are not afraid of an examination, will lend all their aid in support of the action of your committee; and, as I remarked, it is on behalf of these men that I tendered the thanks of the majority for the efforts of your committee in our behalf.

#### READING OF PAPERS.

President Huidekoper: We will now receive the paper of Dr. D. E. Salmon.

Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, Washington, D. C., presented his paper on "Some of the Last Studies on Bacteriology, as it refers to the Domesticated Animals and the Diseases in them."

#### SOME RECENT RESEARCHES IN THE DISEASES OF THE DOMESTICATED ANIMALS.

BY D. E. SALMON, D. V. M.

It is not an easy thing to thoroughly investigate a germ disease, nor is it a task that can be accomplished even with the best facilities by a few weeks or a few months of work. It is fourteen years since Koch gave bacteriology a place

among the sciences by his brilliant researches, which demonstrated the pathogenic relations of the *Bacillus anthracis* to the disease which we know as anthrax, and yet, in spite of the utmost activity in this field of work since that time, there are still many communicable diseases of the cause of which we are still in complete ignorance. To illustrate this it is only necessary to mention the fact that the cause of such common diseases as small-pox and cow-pox is still shrouded in mystery notwithstanding the ease with which material for study can be obtained, and in spite of the large reward offered by the Grocers' Company for a successful method for artificially cultivating the vaccine virus.

Unfortunately the greater part of the bacteriological researches which are published for the enlightenment of the world are absolutely valueless, and are a check to progress rather than an aid to it, because some one must disprove the conclusions which follow from them, and, even then, other workers must remain in doubt as to which observer was correct. The study of too small a number of cases, the failure to use a sufficient number of experimental animals, the neglect of scientific methods, the lack of proper facilities for work, are among the most common causes of failure in bacteriological research. The most complete and thorough study of a single case of disease is not sufficient to enable any man to write a description of the typical symptoms and lesions of that malady. Individual cases in the same outbreak differ from each other in a surprising degree, while the type of one outbreak may differ very materially from that of another. These facts are well known, and for that reason the clinical history and pathological anatomy of any given disease cannot be considered reliable until many individual cases and a considerable number of epidemics or epizootics have been studied.

If this is true of the more superficial and easily observed characters, how much more is it to be remembered in connection with the obscure problems relating to the pathogenic germs, their morphology, physiology, life history, susceptibility to germicides, their effects upon the animal body in which they are multiplying, and the toxic products which are developed during their growth. These are questions which require long observation, a division of labor among competent assistants, many experiments, proper experimental grounds and laboratories, and every possible precaution to avoid errors and many hasty generalizations. In speaking to you, therefore, of the recent bacteriological work of the Bureau of Animal Industry, I hope you will not anticipate any startling novelty which has been wrenched from nature's tenacious grasp within the last week or two, and which is destined to revolutionize or blot out all that we thought had been built up in the past. Such wonderful discoveries are few and far between, and when investigators claim them the chances are that they are mistaken. My purpose is rather to point out results which we have reached by gradual and careful advances during years of patient work; and while such a plan on my part may debar me from introducing those sensational features which make much of our modern science resemble a fairy tale in more respects than one, I feel sure that there are some advantages in dealing with conclusions which are reasonably well founded upon carefully observed facts.

Realizing the impossibility of thorough work being done by any one man in so difficult and complicated a field, it has been my constant endeavor to divide

the investigations so that each branch may be in the hands of a specialist. Thus it is the duty of one veterinarian in the Bureau to secure proper animals for experiment, to take charge of such animals during the experiments, take their temperature, observe their symptoms and see that there is no chance of contagion from lot to lot. Another man with from three to five assistants has general charge of the investigations, makes the cultures, prepares the material for inoculation, studies the germs and the pathology of the disease, and decides what experiments are necessary to elucidate these points. The chemical investigations are carried out by a competent chemist, and an artist is always ready to make illustrations of the pathological appearances or of the germs, while still another person is prepared to photograph such specimens as must be delineated with absolute correctness. In addition to this we have men to collect material and observe outbreaks in the field, so that our experimental work will not suffer by constant interruption. If one man undertakes to carry on all of these duties his time is broken up, his experimental animals are neglected, and his experiments themselves interrupted. This accounts for much of the poor work that is being done, and shows the necessity of at least one place in the country where investigations are carried on with every facility in the way of experimental grounds, laboratories, men and money to give reliable results.

In working for the development of such an institution as this at Washington my chief object has been to show what services the veterinary profession can render to the country and to the world, and in doing this to incidentally furnish the means for protecting our animals from disease, and the facts for a more substantial, complete and scientific foundation for veterinary practice. In carrying out this plan I have had the cordial cooperation and assistance of the profession, and I take the opportunity to return thanks for this unfaltering support and to express the hope that our labors may be so performed as to merit a continuance of a like good will in the future.

The chief part of our scientific work has been for so long a time devoted to swine diseases that it is impossible to omit a consideration of them in a paper of this kind. You are aware that we have described two diseases caused by two distinct germs. These germs can be easily distinguished from each other, but we are now satisfied that the diseases can only be safely diagnosed by determining which germ is present. Different outbreaks of swine plague differ greatly in the lesions presented. Sometimes these are confined to the lungs, as in the first cases we studied; often, however the intestines are affected, and the appearances presented may then so closely resemble those seen in hog cholera that the most practiced eye cannot decide which germ is responsible for the mischief. It is then only by a bacteriological examination that an accurate diagnosis can be made.

These diseases, though frequently both are present in the same herd, are often found each by itself producing ravages without the aid of the other. In a very destructive outbreak studied during the present summer in New Jersey, the most careful bacteriological examination revealed only the swine-plague germ. Some of the animals from this outbreak were taken to our experiment station and placed in an enclosure with other pigs, and the disease was commu-



nicated to the latter by cohabitation. There is, consequently, no doubt about swine-plague being a communicable disease—one that can be transmitted by inoculation and by cohabitation.

Its relative distribution and prevalence, as compared with hog cholera, are questions that remain to be answered. If the lesions were always so characteristic that a diagnosis could be made by an ordinary post-mortem examination, it would be an easy thing to put a force of men in the field and determine them in a single season, but so long as a bacteriological study must be made of each case it, of course, requires a much longer time to obtain satisfactory results. My first impression was that swine-plague was of much less importance from an economical point of view than hog cholera, but our recent investigations have modified these views, and have indicated that the former disease may be as prevalent and cause as heavy losses as the latter.

The great aim in bacteriological investigation, as in all other branches of medical science, is to discover the means of preventing or curing diseases. The discovery of the microbe, and the study of its life history, are but steps in the accomplishment of this object. We have, therefore, from the first endeavored to bring out such facts as would enable us to form a science for the prevention of germ diseases.

It was once my good fortune to listen to a series of lectures by that great naturalist, Louis Agassiz, and I was deeply impressed with a statement of his, that Nature held her secrets with so tight a grasp that an investigator might consider his life successful if during the whole course of it he had been able to discover and contribute to science but a single new principle. He, himself, after a life of almost unparalleled activity in scientific research, laid stress upon but one such discovery, although he had contributed an enormous mass of facts. In our investigations we have discovered two such principles, which have been and are destined to be of very great value to sanitary science.

The first of these principles is that with nearly all diseases the most susceptible animals have a certain power of resisting germs of the greatest virulence. Or, putting the same idea in other words, we may say that, by diminishing the dose of virus, we reach a point where a considerable number of germs may be introduced into the tissues without being able to cause disease. The second great principle is that with non-recurrent diseases the germs produce during their cultivation outside of the animal body certain chemical substances which, when administered to susceptible animals, grant immunity from the effects of that germ. These principles, discovered and demonstrated in the course of the investigations under our Department of Agriculture, promise to be of more value to sanitary science than all the other principles which the combined workers of the world have contributed to bacteriology since Koch demonstrated the germ theory of disease.

The easy, safe, and certain production of immunity in animals exposed to contagion would be a most powerful weapon for the control of germ diseases, and, consequently, our investigations have been for years turned in this direction. We have tried the Pasteur method of vaccination, using attenuated virus or vaccine; we have tried inoculation on the principle discovered by us of producing the desired effect by means of graduated doses of strong virus, and we

are now experimenting with the chemical substances produced during the growth of the microbes. We have found that vaccination and inoculation, as applied in hog cholera, are uncertain and insufficient in results, and have certain disadvantages which make these methods of little value for the prevention of this disease. We turn, therefore, to the method of prevention by means of the chemical substances formed during bacterial multiplication.

This question is one of the most difficult ones to study that has confronted the bacteriologist. When we first demonstrated the principle we found that the culture liquid, when freed from living germs, had the power of conferring immunity when injected into the tissues. But this very discovery suggested a host of questions which must be answered before the method could be of practical use. The culture liquid, considered chemically, is a complex substance. Which of its constituents has this wonderful power? What are its properties? How can it be separated from the useless matter with which it is combined? Is it a single alkaloidal substance, or does the result depend on two or more of these combined? At what period of bacterial growth is it most abundant? Will it produce the desired effect when administered in other ways than by hypodermic injection? What is the dose required to produce satisfactory immunity in the hog, and how often, and at what intervals must this dose be repeated? These are some of the most important questions which pressed themselves upon us for solution; and when we attempted to solve them we found other questions of a secondary interest which we were compelled to grapple with and solve before the others could be undertaken.

We had no test for this mysterious and hidden substance, no way to recognize its presence, except its effect in the production of immunity, and this test it required weeks to make, and even then the experiments were liable to fail. How much more patience and skill does such an investigation require than the ordinary chemical methods where a re-agent is added to a solution, and the immediately formed precipitation shows the presence of the sought-for constituent! Our first experiments were made with pigeons, and while they served to demonstrate the principle, we soon found, to use chemical language, that the reaction with them was not a sufficiently delicate one to enable us to solve, without great loss of time, the other questions that came before us. The difficulty was, that pigeons are not easily killed by the hog cholera germ, especially in summer, and, consequently, after we had treated some to produce immunity, and afterwards inoculated them, together with other pigeons, to test their comparative resistance, none of the inoculated birds would die, the untreated ones resisting, as well as those that had received treatment. Such an experiment was, of course, a failure, and must be repeated.

In short, it was necessary for us to select an animal to experiment with that in its natural condition of resistance would always die when inoculated with a moderate dose of virus, but which, with a slight addition to its natural power of resistance, would always recover from such an inoculation. The pig was out of the question—its resistance to virus is too variable and the possibility of producing immunity too doubtful. After considerable experimentation we found the guinea pig to answer these conditions to our satisfaction. It was here that our first discovered principle came to our assistance. We so graduated the dose

of strong virus used in our tests that we gave just sufficient to produce death in the natural condition of resistance. Our guinea pigs might then be compared to the chemist's reagent, which is just faintly alkaline. He dips in it the litmus paper and it remains blue, but let him add but a single drop of acid and then touch it with the litmus paper and the red color at once reveals the acidity. So with the guinea pigs—inoculate them with our standard dose of virus and they invariably die, but add only slightly to their power of resistance and all will live. I cannot go into full details of our experiments in this paper, in fact they are still in progress, but I have already given you an idea of our greatest difficulty and how we overcame it.

Another difficulty was to get the material for producing immunity in a sufficiently concentrated form so that a large enough dose could be given hypodermically. The culture liquid contains such a small proportion of it, and the dose of liquid injected must, consequently, be so large that it could not well be given to small animals hypodermically. We tried first to inject it in sufficient quantity in the abdominal cavity, but it is so irritating in its properties so as to frequently produce peritonitis and death. We also tried to condense the liquid by evaporation, but our substance was either volatile or destroyed by the heat, for our condensed liquids did not show a corresponding increase in the power of conferring immunity. At this stage of the investigation we added a chemist to our force, and have since learned not only how to condense our culture liquids without destroying their properties, but we have separated the chemical constituents and decided which are concerned in the production of immunity. There are many details which must still be worked out before the method can be practically applied to swine, or before we know that hog cholera can be practically prevented by this means. The most difficult questions of the investigation, however, are solved, and what remains is a matter of details. These statements are made because this is the most interesting line of bacteriological work now engaging the attention of scientists, and I know that you will be interested in learning something of the great problems before us and how we have solved them.

We will now turn our attention for a few minutes to the subject of Texas fever. While this disease, as you know, is allied by its characters to the bacterial fevers, it has certain marked peculiarities which have caused it to be regarded as the most mysterious malady which remains for modern science to investigate. For four years we have been giving the disease very close attention and study, and our results have been unexpected to ourselves and so different from those reached by other investigators that we have not pressed our conclusions until we had taken every precaution to confirm them.

I am prepared now to say that Texas fever is not a bacterial disease. There are no peculiar bacteria to be found in the blood, spleen, liver or other organs; and as a rule the blood and tissue are free from even the common septic bacteria when examined immediately after the death of the affected animals. All the illustrations which have been published showing preparations of blood from Texas fever animals swarming with bacteria, and sections of the tissues showing the same micro-organisms are misleading, and may be put aside as of no value to the student of this disease. The blood and tissues do not present such appearances when properly examined.

Texas fever belongs to the malarial type of diseases. The germ resembles the malarial organisms of Laveran. It is found within the red corpuscles of the blood and may be demonstrated in them before the death of the animal. We have not been able to cultivate it, and do not believe that it can be cultivated by any of the methods now in use by bacteriologists.

We have studied outbreaks that were caused by cattle from the tide water section of Virginia, from North Carolina and from Texas, and in every case we have found the same micro-organism present in the blood. In some cases almost every corpuscle would be invaded. These parasites rapidly destroy the corpuscles and the number of these soon falls to one-half, one-third, one-fourth, or even one-fifth of what is found in health. This destruction of the corpuscles of course accounts for the excretion of the red coloring matter in the urine.

The possibility of the infection of pastures by ticks has also been demonstrated. For two years we have picked the ticks from Southern cattle and scattered them over experimental pastures, and we have found that susceptible cattle would contract the fever from these pastures as readily as from those upon which the Southern cattle themselves had been placed. It is a fact, therefore, that ticks may infect pastures without the presence of Southern cattle. Whether the Southern cattle can infect pastures without the presence of ticks is still an open question. We had an experiment planned to settle this problem the present summer, but it failed by the unexpected appearance of the ticks upon this lot of cattle which we had supposed were protected from them.

The main results of our Texas fever investigations may therefore be summed up as follows :

Texas fever belongs to the malarial group of diseases.

It is caused by small micro-organisms which are found in the red blood corpuscles, and which are not bacteria, but bodies of the nature of malarial germs of Laveran.

Pastures may be infected by ticks from the bodies of Southern cattle.

While this is only a beginning of the work necessary to elucidate the many interesting and important questions connected with Texas fever, it gives us a solid foundation from which to build, and indicates the direction in which future researches must be made in order to secure successful results.

The paper of Dr. Salmon was illustrated by numerous enlarged views of different germs, cast upon the canvas, the diameters of the germs being multiplied thirty thousand times and their peculiarities pointed out and explained in detail by Dr. Salmon during the course of his lecture. Among others was a specimen from gelatine culture, one day old; hog cholera germs; the same germs from a gelatine culture fifteen days old; the same germ from a liquid culture, one day old; a germ described by scientific men as the swine plague germ; the swine plague germ obtained by inoculation; a hog cholera germ with an original stain; a preparation from an animal afflicted with Texas fever; a preparation of hog

blood; a preparation made from blood before the death of the animal, showing double germs of diamond shape, found in Texas fever and malaria; a preparation made from the kidney of an affected animal; a preparation from the kidney of an affected animal, showing the same thing with larger germs, and showing where the germs are to be found; a preparation made from the spleen, which showed about the same as the last illustration; a preparation made from the spleen, from a different animal; an affected blood corpuscle, showing the different forms of germs with two pear-shaped parasites in it.

Dr. Salmon also exhibited views of several places where the Board had had difficulty in ridding the locality of pleuro-pneumonia, showing adjacent pools of stagnant water, dilapidated buildings in Brooklyn in some cases where the pool of water had its course under the buildings. Pleuro-pneumonia could only be obliterated in such a case by the utter destruction of the buildings, the digging up of the ground, and a thorough disinfection of the soil.

President Huidekoper: I think, gentlemen, you will all agree that Dr. Salmon's paper is too important to be discussed hastily, and therefore a motion to adjourn will be in order.

On motion, duly seconded, the Association adjourned to meet at 1:30 P.M.

#### AFTERNOON SESSION.

The meeting was called to order with President Huidekoper in the Chair.

Vice-President Williams took the Chair and Dr. Huidekoper read the following paper:

#### CONTRACTION OF THE HORSE'S FOOT.

BY RUSH SHIPPEN HUIDEKOPER, M.D., VETERINARIAN.

Syn.—*Zwanghuf*, German; *Encastelure*, French; *Incastellatura*, Italian; *Encatenadura*, Spanish; *Hoof-bound*; *Contracted Heels*, English.

The aphorism of "no foot, no horse," has been used for years in such a general way, conveying so many varied ideas to the hearer, that it has become sententious for the veterinarian to use it to the outside world; it is too accustomed to its daily reiteration from quack farriers and conceited horsemen who have personal theories, each of their own, which, having been derived from some dis-

covery in regard to *a* horse's foot and resulted in benefit to *that* horse, is supposed and claimed to be applicable to *all* horses' feet. They know that the horse's foot is more or less intricate in its structure, but look on it as an important article much as they would upon a patent collar or toe weight, which has given a good result in one case, and therefore they suppose it should in all. Before comparative anatomists and practical veterinarians, however, no apology is needed for reviewing their knowledge of the foot, or adding any detail, however small, to it.

The anatomist, who might have been a Darwin or a Leidy of his race ages ago, when the four-footed animals first came upon the earth, could certainly never have conceived that the free-moving ten bones of the carpus or tarsus, and the multiple digits of the animals of their day, could be diminished to a single toe, and it serve as a useful member, finding support only by its distal extremity. We, as practitioners, are too apt to overlook the importance which the remnants of the evolution in the horse's foot bears on its practical troubles and diseases, and we too often fall into the habit of regarding the feet of one horse as structures identical with those of another, which they are not.

For convenience in this paper, the word foot will be used, as meaning the "surgical foot," from the second phalanx and coronary band down, and will be qualified as the anatomical foot, if it is so meant. While the elements of the feet are the same in all the solipeds, it is important to review some of the anatomical and physiological peculiarities which allow the shape of a thoroughbred's foot to appear like a cylinder, while that of a Clydesdale has the conformation of a flat cone.

Comparing the two third phalanges, it is seen that the transverse diameter of one from a flat-footed horse is much greater in relation to its antero-posterior and supero-inferior diameter, that the concavity of the plantar surface is much less, and that the basilar and retrossal processes stand out at an angle from the median line of the bone instead of lying almost parallel to it, as they do in the bone from a mule-footed horse. In the flat foot the articulation of the third phalanx with the second phalanx above is more shallow, and consequently admits of a greater amount of lateral motion between the two bones. The difference between the navicular bones of the two feet is only one of accommodation, except that in the flat foot the navicular is closer to the plantar surface and has greater freedom of movement. We recognize that the ligaments of flat feet have greater surface of attachment, and in the lymphatic animal are less dense and more extensible, thereby allowing a greater freedom of movement, but predisposing to a greater amount of bone irritation if they are wrenched at their origin on the bone. The plantar cushion of the flat foot is larger in proportion to the size of the foot than in the high-heeled foot, as in the former there is a greater divergence of the wings from the median line of the pedal bone. The walls accommodate themselves to the difference of relationship of the internal parts. The flat foot, in profile, is seen truncated at a more acute angle. The greater and wider frog sunk at the glomes of the heels nearer the ground renders in some cases the entire posterior part of the foot a soft cushion, holding up both quarters and bar, whereas, in feet of the opposite conformation, these latter must be considered as the important factors in the movement of the heels, while the frog plays a secondary part, acting as a passive support. In any horse the fore and

hind feet differ slightly, the former always approaching more to the type of the flat foot, while the hind ones resemble more those of the high-heeled foot.

For the purpose of this paper, the physiology of the foot may be reduced to the recognition of a solid bony centre (second and third phalanx and navicular bone) with elastic lateral wings (lateral fibro-cartilages) surrounded by a vascular network admitting of moderate movement (*rete processigerum, rete plantarum*, and synovials of the flexor tendons) which rest on an elastic cushion, and are enveloped in a dense keratogenous box (wall, sole and frog) which plays only a passive part in the functional activity of the whole. The internal parts are rich in nutrient blood-vessels, and are luxuriant in nerves (tactile, general sensation and trophic).

The keratogenous covering should be dense and firm, to resist friction, and moist and pliable, to accommodate itself to alterations of pressure.

The elasticity and distensibility of the horse's foot was recognized by Solley-sel, and was made the object of special study by Bracy-Clark, Coleman, Geoag and Bouley, all of whom left information of value.

Professor J. Lechner, of Vienna,\* was one of the leaders in the study of the relative movements of the various parts of the foot, and he formulated a theory that, when pressure is placed on the foot from above, there is a dilatation of the coronary portion with a retraction of the plantar edge of the heels, producing a rotation of the posterior extremity of the walls. Professor Lechner employed in his experiments several instruments, one of the most ingenious of which was an electric current and bell. (Fig. 1). A rod (*a*) fastened to the toe of the

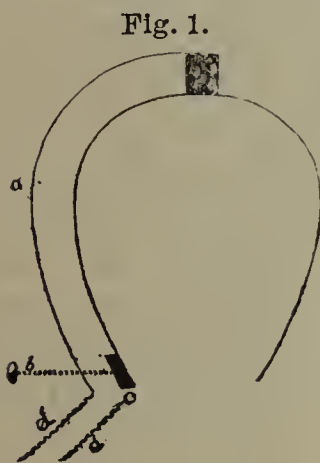


Fig. 1.

horse's foot, as this is the most fixed point, follows the line of the wall to the heel and holds a pin (*b*) which can be screwed in and out; the latter faces a piece of zinc set in the quarter (*c*); from the pin and zinc (*b* and *c*) wires (*dd*), extend to a bell. When weight is placed on the foot and the heels expand, communication is established between zinc and pin, and, the current connected, notice is given of it by the bell. The amount of expansion could be determined by a graduation on the pin. Professor Lechner's paper elicited considerable controversy, and his work was followed by numerous experi-

ments and studies by others.

Lungwitz and Schaaf, by means of an ectasimeter of their own, arrived at the following conclusions:

1st. The raised foot is smaller at the plantar surface than it is when upon the ground.

2d. Dilatation of the plantar border augments with the velocity of the gait.

3d. The inside heel dilates more than the outside one.

4th. The heels of the hind feet dilate less than those of the fore feet in the same horse.

5th. The coronary band dilates at the same time as the plantar border.

6th. Healthy or diseased feet dilate above, under pressure.

\*Neber Hufrotation. Vortrag gehalten in der Section XI (Veterinarkunde) der 54. versammlung deutsche Naturforscher und Ärzte zu Salzburg, 1881.

7th. The dilatation of the posterior part of the foot causes a shortening of the foot. (Fig. 2).

8th. The dilatation of the plantar part of the hoof varies with the form of the foot. In angular, narrow feet it increases toward the quarters and diminishes toward the heels.

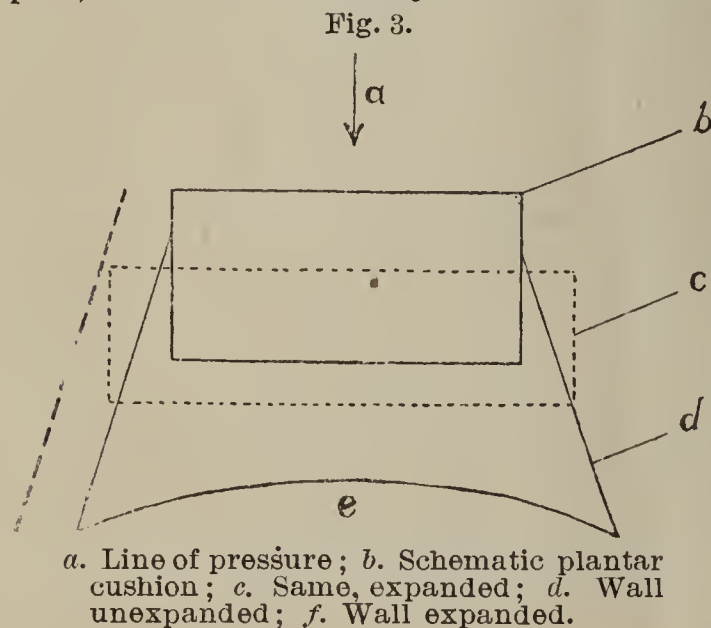
9th. Normal dilatation is not complete in shod feet.

10th. Suppleness of the horn and integrity of the frog are necessary for normal and complete dilatation of the foot.

11th. Shoeing and dryness of the horn interfere with the movements of the foot.

12th. In contracted heels there is a certain dilatation of the quarters, but the heels not only do not take part in the dilatation, but, on the contrary, retract slightly.

Prof. Bayer, of Vienna, Martinak, of Prague, by means of a circular compass, and Dr. Schwentsky obtained about the same results.



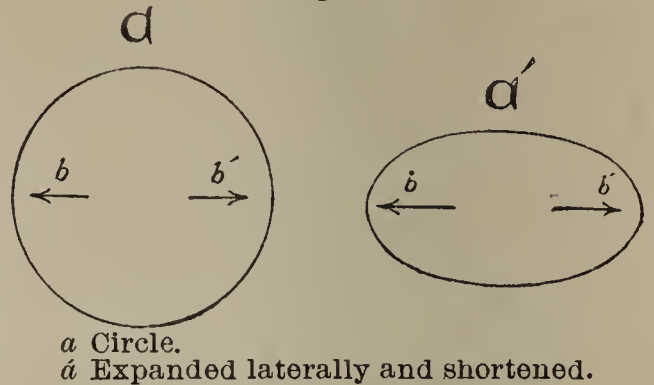
and the convex upper surface of the sole, as in the experiments of Steglich.

Dominick, by experiments on the dead foot, arrived at the same conclusions.

Foringer carried out his investigations by applying a solid shoe having vertical arms on its branches, which held movable screws; his experiments were performed on the natural foot. (Fig 5).

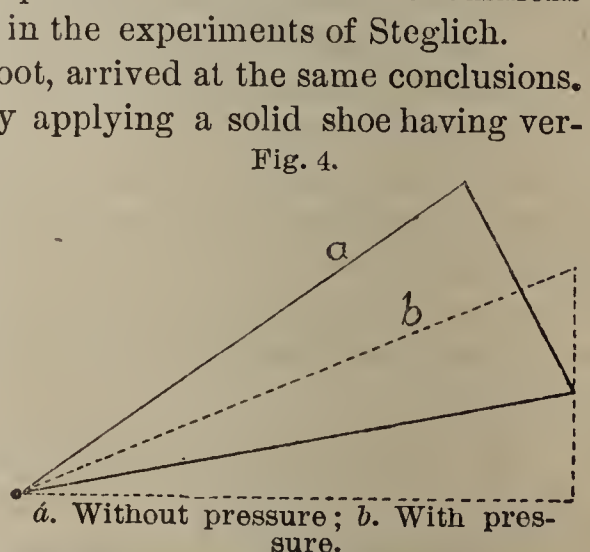
Adams, of Augsburg, with the same instrument, determined the dilatation of the normal foot to be three millimeters at the plantar border and one millimeter at the coronary band; he repeated and verified his work with other instruments.

Fig. 2.



Steglich decided that the coronary band and the plantar border dilate simultaneously, but that the former dilates the most from the pressure of the second phalanx, while the dilatation of the plantar border is due to the expansion of the plantar cushion and the flattening of the sole. (Fig. 3).

Peters, of Schwerin, from anatomico-mechanical deductions, claimed the expansion to be due to a circular trajectory of the pedal bone. (Fig. 4). This, of course, included pressure on the elastic cushions

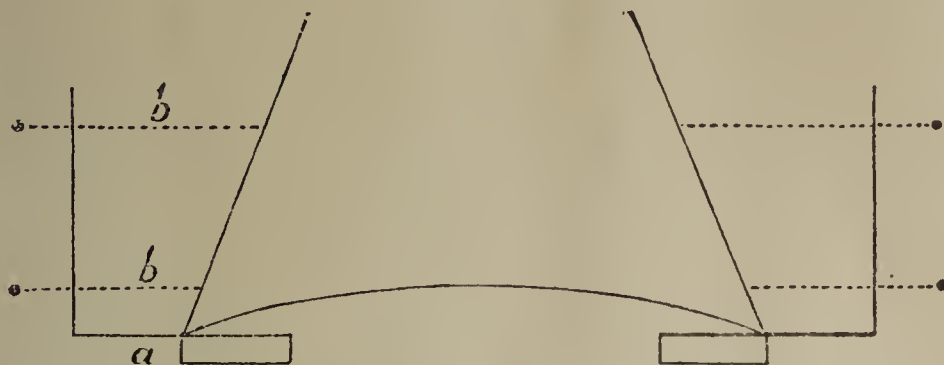


Some twenty other experimenters arrived at analogous conclusions.



From the evidence of these investigators we accept as proven that the quarters

FIG. 5.



and heels of the normal foot of the horse dilate under pressure, that is, when the animal is standing, and more so when it places increased weight on the foot in movement. I, however, agree with Lechner as to the rotation of the heels in some feet, and find that in contracted feet, this rotation is an important factor in increasing the disease. Lechner possibly experimented on slightly contracted high-heeled horses. We can conclude that anything which interferes with the dilatability of the hoof produces an abnormal condition, and must interfere with the vascular structures and nerves contained inside, producing atrophy of the tissues from diminished nutrition, and pain from pressure on the nerves. When any interference with the dilatation of the foot is permanent, it produces a diminution in the size of the organ. This reduction in size may be general, including the whole foot, or local, including only one or both heels; this condition is known as *contraction of the foot, or contracted heels*.

*Contraction of the foot or contracted heels* is evidenced by a diminution in the size of the horny covering of the foot or the hoof, with or *without* lameness. Contraction may be total or partial; in the first case, there is seen to be a general diminution of size, usually accompanied by an increased concavity of the sole, an atrophy at the frog and an approach of the walls of the quarters and heels toward a more vertical position; the surface of the wall is frequently excessively dry, and predisposed to superficial ridges or cracks; in partial contraction the alteration is usually confined to the heels. Contraction may be symmetrical or unilateral; in the former case, both sides being equally affected, there is usually total diminution in the size of the foot, while in the latter the alteration in shape is generally local and more easily remedied. The older veterinarians used the term *true* and *false* to designate a general or limited alteration in shape. True or total contraction, approaching in form the mule foot, narrowed from side to side, with vertical walls, a natural condition in the ass and mule, in the horse may be an *acquired* condition, in which case it is usually incurable, or it may be a congenital condition, in which the contents have been formed, adapted to the altered circumstances; this can hardly be considered as morbid, but while it may not be a diseased foot in itself, it predisposes to all the other troubles which are found, the results of contraction from any other cause.

#### ETIOLOGY.

The study of the etiology of contraction of the feet is, in some cases, an easy matter, but in others it is complicated by various troubles, so that it becomes difficult to determine the cause, or to distinguish it from the effect. In

the majority of cases the secondary effects, or sequelæ, of contraction of the feet, are troubles, which, if they had occurred in a sound leg, would have caused contraction of the foot as a complicating disease.

*Race* has for a long time been recognized as a predisposing cause, and contraction certainly occurs more frequently in horses of breeds which have thick, hard, rapidly-growing hoofs, of dense structure, than those with hoof-walls of a more delicate structure. The Oriental horse has been accused, but I believe somewhat unjustly, of being prone to this affection.

*Heredity* is an important etiological factor. The horse with feet predisposed to contraction will get progeny with like feet; the horse who has, from any cause, acquired contracted feet, is apt to transmit the anatomical defect to his get, and such an animal, although he may not be lame, should be excluded from the stud.

*Dry climate and summer weather* tend to draw the natural moisture from the horny structures, diminish their elasticity, and favor retraction of the tissues, which ends in permanent contraction. Dryness is more serious when alternating with moisture than it is on animals who have been reared in such condition as the horse of the desert, whose constitution has accommodated itself to its surroundings.

*Stabulation* affects the hygroscopicity of the hoof to a marked degree, which is increased when it is continuous for several days at a time, alternating with exposure to excessive moisture. Under these conditions, the fluids of the horny tissue do not seem to be able to find or retain their normal relations to it. An example of the effect of constant dryness is seen in the dead hoof, which alters its shape even when filled with plaster-of-paris.

*Inaction* of the animal, a result of stabulation, diminishes the moisture of the hoof, as it slows the current in the vessel and reduces the amount of blood pressure on its inner surface.

*Too long continuance of the shoes and want of dressing of shod feet* produce the same results by elongating the tissues from their vascular supply. In a stallion, the subject of a legal controversy, kept for twelve months in a stall, the overgrown hoof diminished to one-half its natural diameter, and curled up like the horns of a ram.\*

*Rasping* the walls of the foot after shoeing favors evaporation, and diminishes the hygroscopic power of the horn. *Hot shoes*, which evaporate the fluids from the horn, render the latter improper to reabsorb and hold moisture.

Mechanically, contraction is frequently produced by the vicious system, so common in some shops, of "opening the heels," or cutting away the bars, which are the natural support of the heels and quarters. Shoes fitted too tightly to the heels, so as to hold them and prevent their natural expansion, and nails driven too far back on the quarters, as is seen in the shoeing of some racehorses, both serve as starting-points for subsequent contraction.

*Pain*, whether in the foot or in other parts of the leg from contraction itself, corn, quitters, wounds, ringbones, or trouble in tendons, when they cause the animal to rest its leg and ease the foot from the ground, produces inaction, want

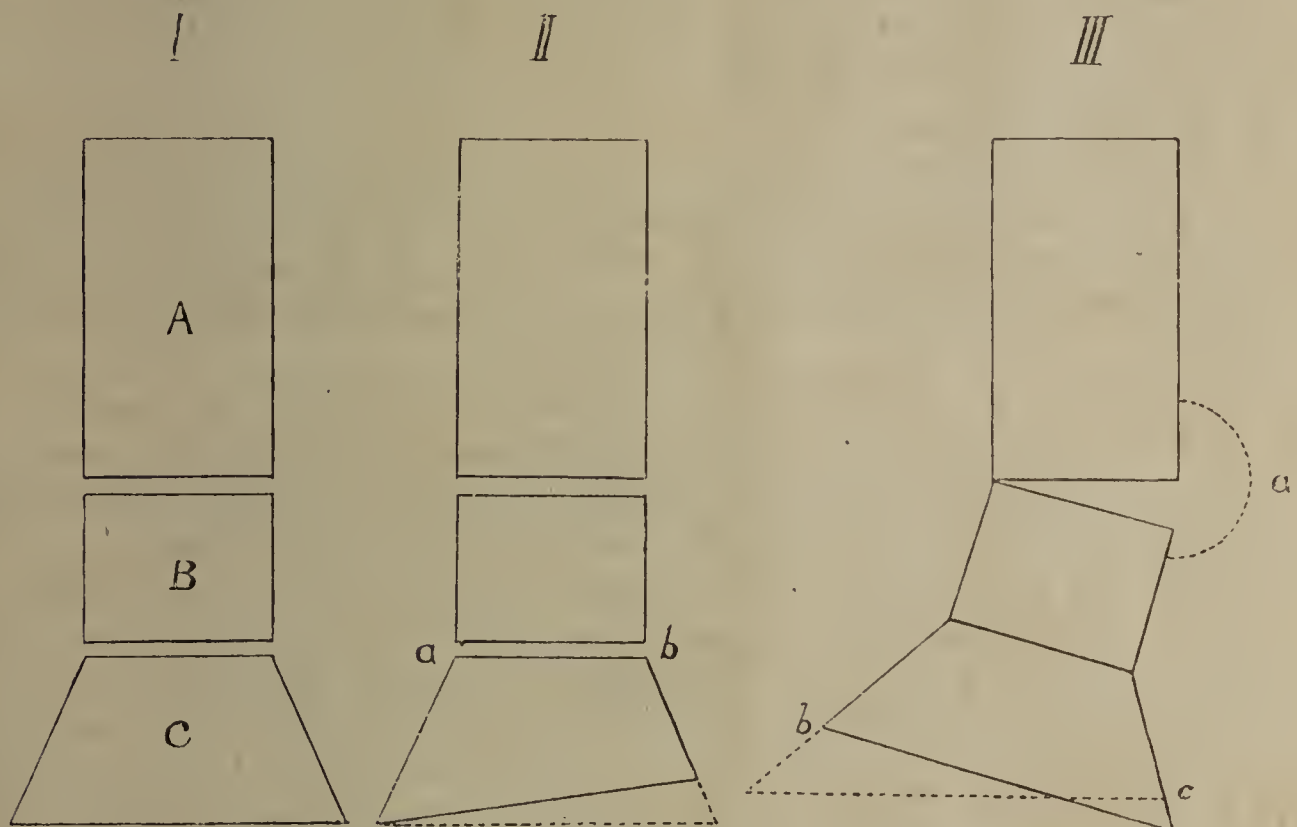
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\* Specimen in Museum at Veterinary School, Alfort, France.

of function, diminished circulation, and exposure to the evaporating currents of air, and are frequent causes of the disease. Traveling at speed on hard roads, and certain other demands, which may only cause temporary pain in the foot, may, at the same time, be the starting-point of contraction.

*Lateral* deviation of the foot from its normal position, whether the cause be in the foot itself, in the pastern, or higher up, at the fetlocks, brings pressure on the sides of a quarter, forces the latter in, and exposes the other quarter, and quickly produces trouble. Uneven paring of the foot and crooked shoeing, quittors, and ringbones, in this way are frequent causes.

FIG. 6.



schematic Column. First, Second, and Third Phalanges.

I, Normal ; II, Uneven paring, producing at *A* pressure of bones, at *B* strain of ligaments, III, A ringbone, producing pressure on quarter, same side.

Surgical operations for quittor and pricked foot are frequently followed by contraction.

#### SYMPTOMS.

The characteristic appearance of a contracted foot is usually sufficient to allow of its recognition. There is an alteration in form, which may be total or partial. In the former case, the foot is smaller than its fellow (if both feet are contracted, it is rare that they are of equal size); the foot is ovoid, from the diminished quarters and seemingly increased antero-posterior diameter; the heels are high, or, in flat feet, may be found with their outer walls lying on the branches of the shoe. The frog is atrophied, and exudes a foul-smelling sweat from the lacunæ, and the concavity of the sole is increased. The wall is found dry and hard, or at times has a peculiar shiny appearance, and it is frequently lined with little fibrillar cords. Again, there is an uneven rolling of the surface, caused by circular elevations and gutters. The bars approach a vertical position.

Even with extensive contraction the animal is not always lame; but it usually at first "points," that is, stands with the leg forwards and outwards, resting on the toe. The animal paws the litter from under the affected feet; it is lame on exit from the stable, but frequently warms out of its stilted gait and travels sound, when the enforced functional activity has brought the blood back to the compressed vessels under the heels to lubricate the dried walls. Later, the muscles of the shoulders become atrophied. (Sweeny.)

*Morbid Anatomy.*—In addition to the external alterations which are visible, and which have just been described as symptoms, there is found an atrophy of the internal structures of the foot. The frog is diminished in size, the wall is compact, thickened, and shows a discoloration of the cement; the elastic cushion is atrophied, and shows strata of fibrous tissue and yellow elastic tissue; the podophyllous laminae are diminished in size; the third phalanx and navicular bones may be atrophied.

In "false contraction," or localized contraction of the heels, there is diminution of the transverse diameter of the heels; no increase in the height, and no increase in the thickness of their walls; this form is always acquired, is accompanied by acute lameness and fever in the heel, and is almost always due to bad shoeing.

#### COMPLICATIONS.

The complications of contraction are produced by pressure, defective nutrition, unstable support, and want of functional activity, and may implicate any portion of the entire leg. *Navicular disease*, with atrophy or ulceration of the bone and interference with the synovial secretion, is the result of long-continued pressure; *corns* and ecchymoses of the podophyllous laminae are the result of lateral pressure; *quittors* are predisposed to by the defective nutrition of the quarters; *greasy heels* find origin from the same cause; *ringbones* and *windgalls* are produced by the strains to which the bones and tendons above are subjected in the animal's attempt to alleviate the pain in the foot by false positions; contractions and degenerations of the flexor tendons occur from want of function; want of use of the leg causes atrophy of the muscles of the shoulders; uneven support of the leg causes interfering; and last but not least, if the case has been going on for some time, scars of blisters and of the hot iron and setons may be found from the fetlocks to the upper end of the scapula, which have been intended to accomplish what could have been done with a paring knife and a proper shoe.

#### PROGNOSIS.

In general, the prognosis of contraction depends, to a great extent, upon the duration of the disease and the amount of atrophy of the bones and plantar cushion which has been produced. A foot which has entirely diminished in size will rarely return to its normal condition, while considerable contraction of the heels may entirely disappear, but it is wonderful what a resisting and recuperative power the foot possesses, and unexpected results are often obtained. There is no disease in which tentative treatment is so necessary before giving a definite prognosis. Trivial contraction will at times prove obstinate and become complicated with other troubles, while an excessively deformed foot and a seemingly hopeless lameness will make a rapid journey to recovery from the day of the first treatment.

## DIAGNOSIS.

The diagnosis of contraction is a simple matter in itself to an anatomist and veterinarian familiar with the horse's foot, after a careful examination and comparison of first one foot and then the other, and a general estimation of the breed and character of the animal. It is again not, as a usual thing, difficult to determine just how much of the affected foot is involved; whether the whole foot is diminished in size as the result of long-continued trouble, or whether only a heel, a quarter, or some part of the wall is contracted, the result of one or two sets of bad shoes or closely driven nails. But it is frequently a most difficult thing to determine if the contraction alone is the cause of a lameness, or if it is not complicated by other disease; in the latter case it again becomes of the greatest importance to diagnose which is the original trouble and which the sequela. After recognizing the contraction, the shoe must be removed and examined as to its bearings and the clinching of the nails; the foot must then be pared out, and thoroughly searched for pricks, bruises, corns and any staining of the yellow line which succeeds the podophyllous tissue and limits the sole from the walls and bars. Special attention must be paid to the bars, examining if they had been pared thin or bruised. The frog will be examined by direct pressure, compression from the side, and the structure under it by counter pressure on the frog and the hollow of the pastern. The structures above will be examined for quittor, ringbone, synovitis, strains of the tendons and ligaments, and for bone troubles. Whether other troubles *exist* or do *not* exist, the shoe must be replaced in a proper manner, so as to remedy any defect of pressure or deformity as much as possible, and the animal must be re-examined cold, after warming up, and again cold. It is only in this way that the effects of the work, the presence of temporary local fever, and a proper diagnosis can be arrived at. In many cases treatment of a contraction, or of a complicating trouble, or of both, must be continued for some days before a definite diagnosis and prognosis can be given for either trouble.

## TREATMENT.

The treatment of contraction is *preventive* and *curative*.

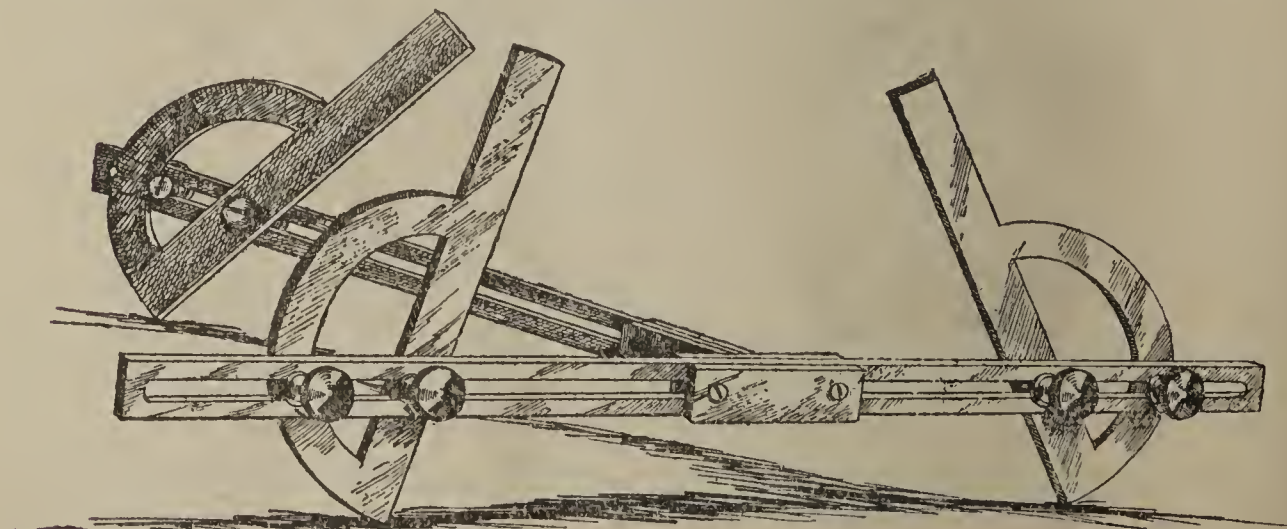
*Preventive* treatment should start with the foal by the dam's side. Winter foals and those in private hands are often forced to stand on dry floors, which bake out the moisture from the cushions of their feet before the wall and frog are fairly ready to perform their proper function, and the dried brittle mass wears off on one side and starts a contracted foot from the earliest days of the animal's life; others which have had the fortune to run in good pasture as foals, at the commencement of winter are housed so that they have no opportunity to wear down excessive growth, and they come out in the spring with deformed feet; others again, from some lameness, injury, or other cause, start a crooked foot, and the lateral pressure soon increases the contraction. From the time the animal is a weanling its feet should be looked after, and dressed with rasp and knife when defects in their conformation and level are found. Good, clean, dirt floors and plenty of exercise prevent dryness and brittleness of the feet; where the latter exists, either from heredity or previous carelessness, the feet should be treated so as to bring them to their normal hygroscopticity. The same rule applies to the older horse, after it has been shod. Thrushy feet are especially

apt, when cured, to become excessively dry and contract. Many horses are passed as sound which would remain so if the feet were properly shod and treated from the moment of purchase, but which soon become cripples, with contraction of the feet from inattention. When an animal is to remain at rest for any time from want of use, illness, lameness of any kind, or from any reason, the feet need immediate and constant attention. At rest, especially if from a lameness, when the foot will be eased from the animal's weight, the circulation is lessened, the food supply to the hard coverings is diminished, the walls are exposed to the evaporating air, and the foot contracts. This must be prevented by paring down the foot, readjusting the shoes, if needed, and proper dressings to supply the deficient moisture. Carelessness is frequently shown in attempting to supply the foot with moisture. Water baths, and especially poultices, remove a certain amount of the fluid from the foot, and rot off the natural protecting varnish from the outside of the wall, and, unless they are promptly followed by other applications, are apt to render the wall dryer than it was before, and to do more harm than good. Preparations of oil are apt to become rancid and produce a rotting effect; when they are used, the foot should always be washed clean from the previous application before a fresh one is applied. Yellow wax, honey, pine tar, turpentine and heavy lubricating petroleum are among the preparations which can be used with advantage. There are also numerous inventions of sponges, fomenting pads, etc., which are of benefit, if not used constantly.

But the most important of all preventive treatment is proper shoeing. If the foot is kept on its proper level with the frog and heels bearing so as to admit of the normal elasticity of the foot, the circulation of the blood will bring the proper nutrition and the natural emollients to the surface of the keratogenous portions of the foot, and little more will be needed except for the remedy of other pathological conditions.

*Curative Treatment.*—Most of what has been said in regard to preventive treatment is applicable to the curative treatment of contraction. When contraction has taken place the flooring and bedding of the stable must be looked to; the moisture of the media which come in contact with the feet must be regu-

FIG. 7.



lated; the entire hygienic surroundings of the horse much guarded, as if we had an ill animal to deal with. The foot is now to be inspected carefully and the points and amount of contraction are to be determined. It is frequently useful,

especially when shoeing is to be left in the hands of a blacksmith, to take measurements of the foot in order to know just what had been gained from time to time, both in the size of the circumference of the foot at its plantar surface and coronary border, and as to the angles of the wall at toe, quarters and heels. For this purpose, and for use in construction, I have invented this instrument, a *Podometer*, (*podō*, foot, and *meter*, a measure), Fig. 7, which can be brought to bear on any part of the foot, showing the level of the sole and heels and the angles of the walls. The instrument is useful also in verifying differences of opinion which exist between the more or less experienced persons who are interested in a shoeing.

In cases of moderate contraction, with little or no twisting of the foot, it can now be leveled and the contracted portions relieved of pressure at once. In more severe cases, the alteration in shape must be nursed, a little at a time, as a too radical change may predispose to missteps, wrenches, or excessive pressure at another point, producing traumatism at other parts. Shoes are also used which by their shape or by the addition of springs, screws or other devices, force the heels apart; but these latter methods should be used with great caution so as not to produce rupture of the blood vessels and complicating inflammation. The choice of shoe depends much upon the surroundings in which the horse is to be placed, if at pasture or in the stable, if at exercise only or at work, and the severity of the work; again, a case left in the veterinarian's infirmary can be treated with heroic dilatation, while that remaining with the owner must be treated with more conservatism, unless it can be seen frequently. The following are the principal methods of expansion:

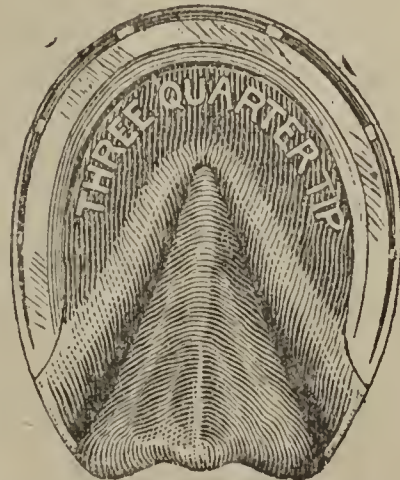
*a. Barefeet*; where expansion is obtained by frog pressure; this, of course, is only applicable to animals which are to do nothing.

*b. Tips, slippers, half-shoes, three-quarter shoes, semilunar shoe or truncated shoe*, which acts in the same way, but protects the wall from breaking. (Figs. 8, 9).

FIG. 8.



FIG. 9.



*c. Bar shoes* are indicated when the frog is very much atrophied and pressure cannot be brought upon it with a plain shoe. Bar shoe as commonly made (Fig. 10); as properly made (Fig. 11).

*d. Unilateral nailing of Turner* (Fig. 12); with this system the frog and remainder of the foot has play from the toe and mamma to which the shoe is nailed.

FIG. 10.

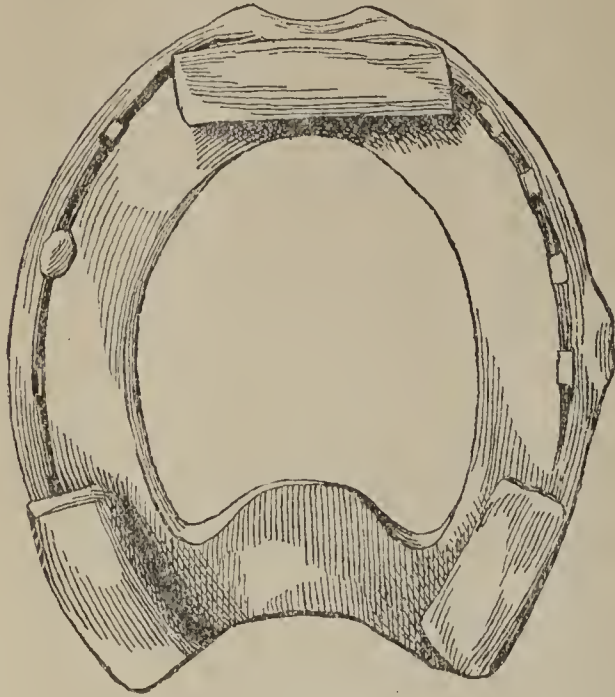


FIG. 11.



FIG. 12.

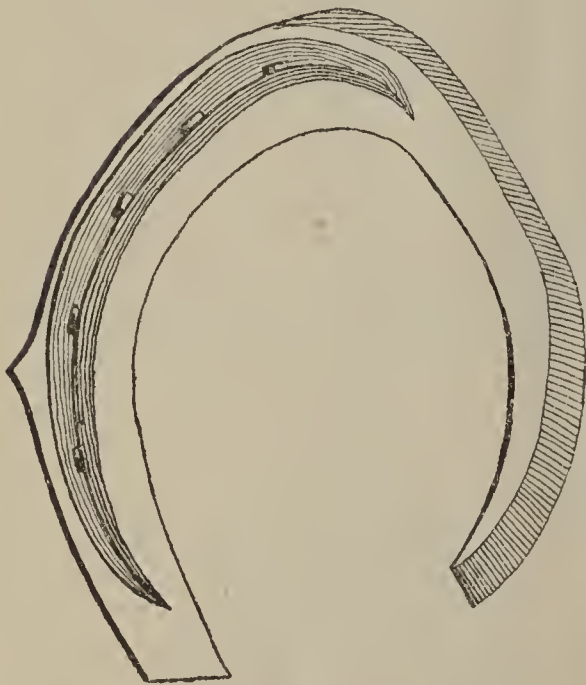


FIG. 13.

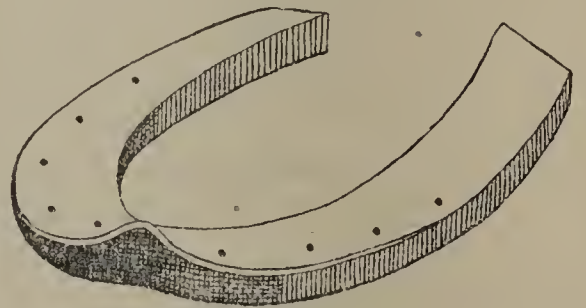


FIG. 14.

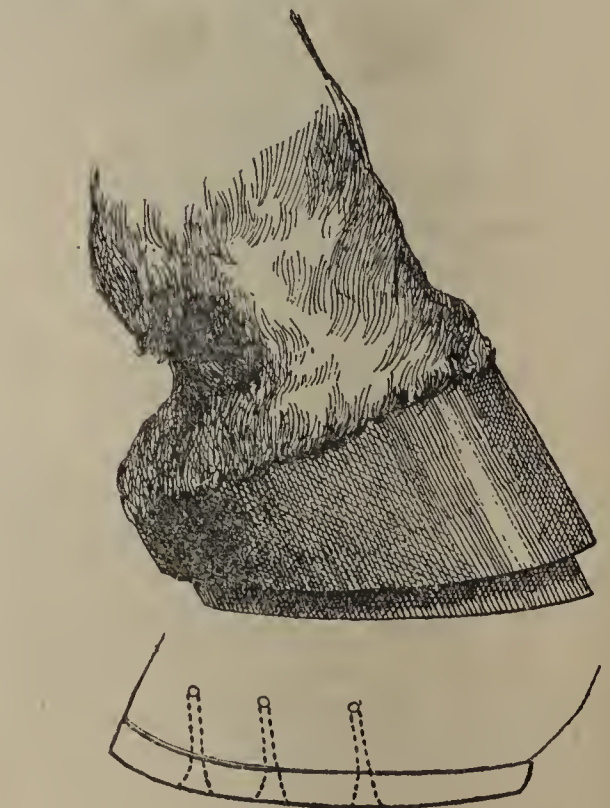
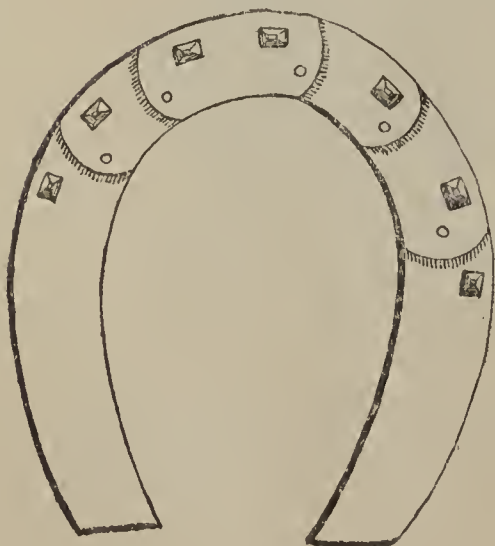


FIG. 15,





e. *External beveling of Mayer* (Fig. 13), is supposed to throw the heels out as the weight of the animal descends on the branches.

f. *The Charlier Shoe* (Fig. 14), protects the edge of the wall below any genetic tissues and allows natural expansion.

g. *Articulated Shoe* of Bracy-Clark and Vatel (Fig. 15), is not solid.

h. *Defy's Expanding Shoe* (Fig. 16). This shoe can be used with most excellent results when the horse is in the hands of the veterinarian or a careful operator who will avoid too rapid expansion and be ready to combat inflammatory processes if they arise. By means of the Defy vise (Fig. 17), the amount of expansion can be regulated from day to day. The clamps turned into the lacunæ between the frog and bars should be fitted to the face of the bars exactly, and must not be allowed either to bruise the bars or press upon the frog. With this shoe I have obtained most excellent and rapid results in feet which seemed hopelessly deformed, but I always insist that I must see the case frequently.

FIG. 16.

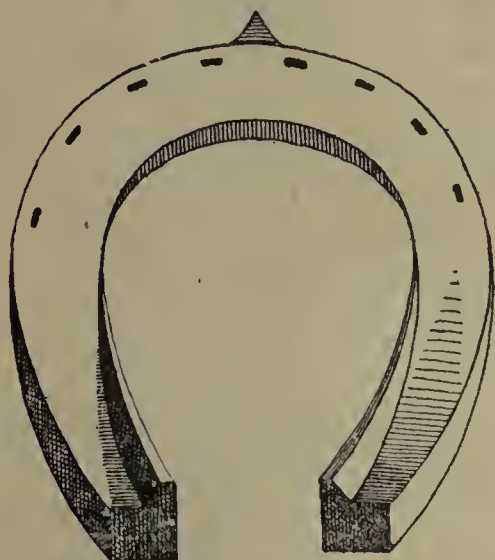
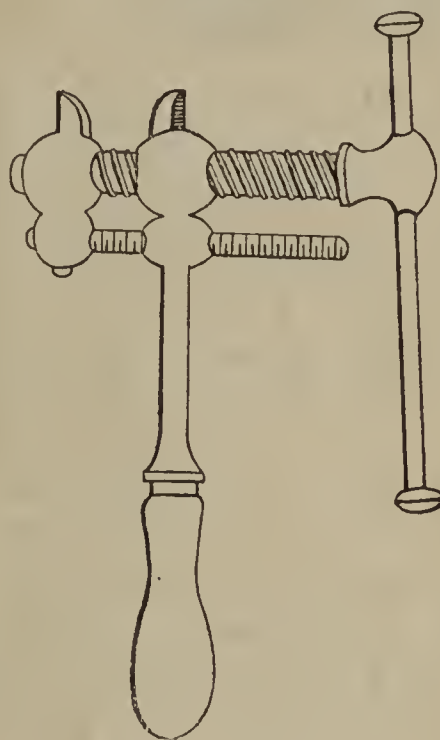


FIG. 17.



*Expanding shoes* have also been furnished with screws set between the branches, the first by Goodwin, then one by Foures, in which the screw was set over a bar shoe, and one by Vandergrift with a fixed screw across the branches.

*Hatin* and *Steinhoff* made shoes articulated at the toe and expanded by a V spring; later comes the *Roberge Expander*, which is held in a plain shoe and also acts directly on the bars; it only differs from *Hatin's* shoe in the shape of the spring.

All these shoes have their merits, and many are adapted to special cases to which the others are not suitable, but *all* should be used with caution and replaced by a plain shoe as soon as the foot commences to assume a normal shape.

With extremely atrophied frogs, artificial pressure can be made by means of sole leather, or the "*Never'slip Horseshoe Pad*," which consists of an india rubber "frog" attached to a piece of sole leather (Fig. 19).

It is needless to recall, except as a matter of historical interest, the *desoling* and *forcible rapid expansion* of Giordanus Ruffs, 1250 A. D.; Carlo Ruini, 1618; Soleysel and others.

FIG. 19.

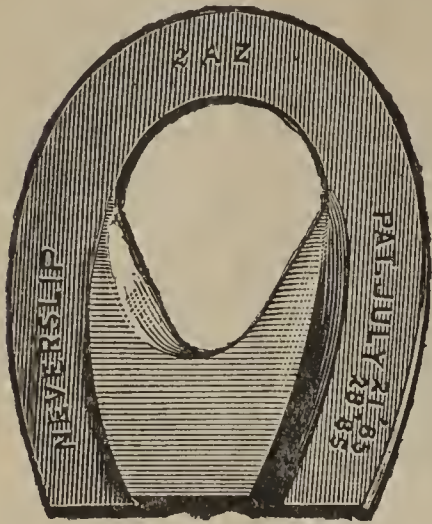


FIG. 20.



Severe contraction, especially when complicated by sidebones may, however, be greatly benefited by guttering the walls of the quarters at an oblique angle to the fibres of the wall and then resorting to proper shoeing and protection of the weakened wall (Fig. 20).

Prof. A. Liautard, Dean of the American Veterinary College, then presented the following paper :

#### VETERINARY JURISPRUDENCE.

##### A COMPARISON OF THE ANGLO-AMERICAN AND CONTINENTAL LAWS OF WARRANTY.

*Mr. President and Gentlemen*—There are two things connected with the circumstances of the present occasion which I cannot fully account for.

The first is that I should be selected by your worthy Secretary, Dr. Hoskins, to take so prominent a part in your proceedings, and the second is that I should presume so far as to consent to appear before this grand annual re-union of members of our noble profession—this great gathering of veterinarians from nearly every portion of the land—in the character of a conveyor of instruction or the originator of measures or policies of action. To meet with you, gentlemen of the West; you to whom I was wholly a stranger when with others I came to this great and wonderful city to unite our counsels for perfecting the establishment upon permanent foundations of the United States Veterinary Medical Association—was, I am afraid, a great presumption on my part. But the good of the profession was held prominently in view; the welfare of our Association was at stake, and the prospect of solidifying a national feeling of brotherhood and a friendly professional union were all to be considered, and I felt that when thus requested to aid in your discussions my silence could hardly be justified.

And do not these objects furnish a sufficient apology for my confidence in coming before you, and will they not also constitute a sufficient plea for the indulgence with which, I doubt not, you will accept my remarks, even if they

should. haply, miss your approbation and fall short of your expectations? Upon this assumption I proceed.

Gentlemen, when we quietly reflect upon the duties and obligations of the veterinary surgeon, we can hardly avoid being impressed with the fact that ours is not simply a single calling, but is largely multiform in its character, and possesses some very peculiar features; and that these are in some instances of such a nature that it is a wonder that the value of the veterinarian and of the services which he renders to the public should not have been at best sufficiently appreciated to secure for him the social, official and legal standing which he may justly claim for himself.

Many duties are imposed upon the veterinarian which are avoided or escaped by his brethren in human medicine, who has it in his power, in many cases, to assume the title of specialist and to enter upon the peculiar studies pertaining to the role he has chosen, while, on the other hand, the veterinarian, generally speaking, is not only expected to be a competent general practitioner, and even a surgeon, but has often to add to these the functions of an obstetrician, and to that again even the duties of the general sanitarian. Thus, he must be now an equine pathologist; then an expert in cattle diseases; next, even a connoisseur in diseases of the lower animals, including dogs and birds; all this, if not more, but he must in order to supplement these various functions and capacities, and others which might undoubtedly be specified, stand ready to encounter the risk of burning his fingers and jeopardizing his reputation by handling points in law and becoming entangled in matters of jurisprudence and questions of traffic. The beginning of his trouble here is the moment when he is called upon to give his professional opinion in connection with the sale and purchase of domestic animals, principally in the sale of horses.

And this is the subject I have chosen as the topic of my remarks on the present occasion.

The decision of the question of the soundness of a horse, or in other words, his value when offered for sale or sought for purchase, is one of the most important of the duties devolving on the veterinarian. As affecting the seller or the purchaser of the animal, it is of course the first in importance, and it is one which is constantly coming before the veterinarian for the exercise of his skill and trial of his integrity, and I may add, his courage. Every day animals are brought to him for examination and judgment, and he is called upon for written certificates as to their condition and soundness, and it is usually his verdict which determines the question of sale or no sale. The responsibility which is thus laid upon his shoulders may be, and is in fact, sometimes enormous, and no man can count the damage he may incur from an unacceptable decision, pro or con, however honest, when the result of such an opinion may spoil a good trade for one man, or involve another in a bad bargain.

Gentlemen, in the performance of this part of our professional duty there is no possibility of escape or of chance for the concealment of an opinion; it must be stated in black and white, and whatever your judgment may be, it is most likely in a majority of cases, to be a condemnation of the animal.

I said "enormous" responsibility. Yes, not only in a professional sense, but as a matter of social involvement. Standing between the seller and the buyer,

our verdict must be candid and true. Upon no one else can reliance be placed for a correct, fair and honest judgment. No man must buy your opinion; no partiality must influence your verdict; you are nobody's friend, but a judge standing impartially between two parties, one with something to sell and one wanting to buy something; and you are to pronounce upon the quality of an article of merchandize, without considering who may be benefited or who may be injured by your opinion.

Yes, it is a trust of which we veterinarians ought to be proud; one of which we must acquit ourselves with the most delicate fidelity, with the nicest integrity of purpose, with the most scrupulous carefulness; one, indeed, which I believe places us in the first rank amongst useful citizens, by reason of the intimate connection which is thus established between ourselves and the courts of justice. It is a trust, also, which is far from being always a pleasant one to exercise, for it may often bring us within the scope of the threatened vengeance of violent and unscrupulous individuals, as well as the temptations of pecuniary offers, and may all too frequently place us between friends or relatives, with, we know not, what hazard of planting estrangement and enmity; yet with but one line of conduct for us to follow, in answering the single question referred to us for solution, to wit: "*Is this horse sound or unsound?*"

The fact that this is in an important sense, an English-born nation, with a congenital and ineradicable spirit of traffic in our constitution, or that at least most of our antecedents and customs are English, accounts for the fact that many of our laws are either of English origin or are conformed to English precedents or spring from English usages, and those which regulate the trade in horses or relate to questions of property in the animal, are far from being exceptions to this rule. It is for this reason that, following English traditions, we are guided to a great extent in our examination and the conclusion we arrive at in horse trades by what we find laid down in British works on this subject, and principally in those of Oliphant.

What is soundness? is indeed, not a question which can always be answered correctly off-hand. If it must mean a *perfect* horse—perfect in form and wholly free from blemish or disease—it will undoubtedly be as difficult, perhaps, as impossible a task to find such an animal as it would be to find a literally perfect human being. But this cannot be the true meaning of the definition of soundness. The term certainly cannot mean literal perfection; but where then, it may be asked, can it be said that perfection ends and imperfection begins; at what point or line will soundness and unsoundness become merged?

The definition of J. Stewart, who says: "that a horse is sound when he has no disease about him, nor any effect of disease that renders, or is likely at any future period to render him less useful than he would be without it," can scarcely be admitted because it approaches too nearly the idea of literal perfection, especially when the author goes on and states further that "a horse may have disease about him and be sound; he may at least have the effects of disease, have splints, bony or callous tumors, warts, specks on the eye, be blemished all over and still be a sound horse." I might ask what we would think here of a veterinarian certifying as sound an animal whose metacarpal regions were covered with splints, whose coronets were enlarged with large ringbones, whose eyes contained speck

cicatrices of keratoma, and whose coarse hocks were scarred with the cicatrices of actual line and point cauterization?

Oliphant tells us that "a horse free from hereditary disease, being in the possession of his natural and constitutional health, and having as much bodily perfection as is consistent with his natural formation, can be certified as being sound."

No doubt this is a much better definition than that of Percivall, who says that "any horse that is lame or has that about him which is likely, on work, to render him lame is unsound," a definition which largely covers the subject of soundness so far as the function of locomotion is concerned.

But aside from all this, with us, the question must necessarily remain the same. Courts of law will differ in their opinions, and judges will express the varying ideas of various nations on the subject, and the announced results of experienced veterinarians will be too often treated with contempt, or ridiculed on account of difference of opinion, and their various interpretations of lesions and symptoms; and to use the word of a learned judge in a case recently decided: "It is more and more wonderful to know how anyone could pretend to know what was soundness and what was not soundness." \*

In the presence of such facts, gentlemen, facts with which I think you are all familiar, and in the light of such an experience as is common with us all, and of occurrences which I have witnessed too often in a long and extensive practice of this specialty, a doubt has often arisen in my mind whether we are doing right in conducting our examination as we do, and whether in granting our certificates as most of us do, we are dealing justly with all parties concerned, with our employer, with the dealer, and with the horse which has been brought before us. Are we dealing in a strictly legal sense with the inquiries made of us, and justifying fully the confidence lodged in our integrity and intelligence?

What, indeed, is asked of us by the gentleman who wishes to become the purchaser of an animal which after satisfactory trial he has selected as one fit to do his work and minister to his pleasure? The question is a simple one: "Is he sound?" and the answer ought to be equally simple. But how many horses can fulfill the conditions of an unqualified answer, even if literal perfection is not demanded? We may pass a horse because nothing but a small splint is visible, and yet in a few days he may become lame with it.

We may reject the next case because of a small exostosis on one hock, or a small spavin, and yet he may be purchased and may turn out a good and serviceable animal. Can we always distinguish, or are we to reject every animal which exhibits one or any of the ailments that we find in the true sense of the word to constitute unsoundness. To use the words of Dr. Wm. Hunting, the editor of the *Veterinary Record*, "the want of a good definition renders the seller of a horse who gives a warranty, or the veterinarian who gives a certificate, liable to actions at law by the buyer whenever his new purchase goes wrong." And if this should be a correct view, it is easy to see in what a peculiar position we may find ourselves in some easily supposable cases. Let us suppose some condition in which an animal may be affected with some form of acute ailment, which has assumed a serious character and may become incurable or possibly

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\* *Veterinary Record* (June 12, 1890).

prove fatal. Here is a patient which, at the time of examination, had but a slight discharge from one nostril, not very abundant; muco-purulent; inoffensive. We consider it a simple case of catarrh, and before many days have passed it proves to be merely the first indication of a diseased condition of a tooth, which may prove troublesome and refractory to treatment, and, perhaps, result finally in death. Again, assume an animal free from any blemish or unsound indication other than a slight increase of temperature, and perhaps, a slight cough. He is bought, though sickly, and only a few days later dies from an attack of lung disease of an acute character, perhaps grafted on an organ already affected with chronic disease. Next in the category may come an animal in apparently perfect health, but which dies a few days after with colicky pains, due to calcareous formations in the intestines or a vesical calculus.

Similar cases almost without number might, if necessary, be cited in illustration of the point we are discussing. Are we to reject all these because, as vaguely and indefinitely expressed, they are "sick?" Yes—but what then of those with (perhaps latent) diseases which we have not been able to detect, or whose termination we have failed to foresee. If such as these are to be rejected for mere negative reasons and on hypothetical grounds, are we, again, doing justice to our calling, to our obligations, and to all the three parties concerned? If not, I fear that the general investigations which constitute our so-called "examinations" are mere farcical and barren pretexts, and that our certificates are worth less than the paper on which they are written, and can furnish no protection to the buyer, but, indeed, are rather detrimental to the honest dealer and unjust towards the good qualities of an animal which, though unsound, we know in many instances might prove to be a very useful servant, and fully compensate his purchaser, and perhaps might be turned against us in a court of justice.

If I am right, gentlemen, in suggesting such an interpretation of our position, and such a view of the performance of an examiner's duty according to the English law of warranty, as well as the, at least possible, ill-effects of its application, it seems to me that the moment may not have been badly selected to consult with this assembly of veterinarians on the subject, and to ask for their opinion and their suggestions in respect to a remedy for the evils to which I have referred.

This is no new subject with me. Years have passed since its first presentation by myself in Boston, before this same Association. But we were young then—our membership was small—and to-day, when we have strengthened our standing by the accession of so many worthy and accomplished associates, I hope the matter will receive at your hands the attention and consideration to which it is so well entitled. And now, admitting the inefficiency of the old law, with its errors, the problem presents itself in two forms: First, what better methods can be devised; and secondly, if proposed, can they be made practicable and available, and if so, by what means?

Let us consider the first of these points, and to answer this it will be necessary to call your attention to foreign legislation on the subject, and to refer you to the laws which exist in various European States. Let us for, instance, consider the French law which, with some modification, however, we find re-enforced in other nations, including Belgium, Switzerland, and I believe, Italy, and this may be

called the Continental law. In this law the condition of soundness or unsoundness is not judged by the rules which prevail with us, although the method leads to the same results. But the point principally considered is the effect of the unsound condition when it exists, so far as it bears upon the usefulness or the value of the animal. For example, the question is not so much whether an animal has any of the exostoses of the locomotory apparatus, or whether, when present, they interfere as a matter of fact with his working power, as by causing lameness, for example. It is not so much whether he is affected with disease, either acute or chronic, as whether, in a case of fatal termination, it existed previous to the purchase. It is not soundness as we understand it, concerning which the veterinarian is called to decide, but whether the animal has a "vice rhedibitoire," which, at the time, interferes with its present and possibly future usefulness or value. By the term "vice rhedibitoire," is understood a vicious and deficient condition, such as those which by law render the contract void, if the animal was warranted free from them. By this definition, you observe, this warranty is almost synonymous to our English warranty of soundness, which means free from diseases that constitute an unsoundness, while the other means free from any "vice rhedibitoire," which have been specially designated.

To illustrate the first: An exostosis will not be a *vice rhedibitoire* so long as it does not give rise to the characteristic lameness of those affections, "intermittent in character," either when warm or when cool.

A disease which proves fatal soon after, or within a few days of the purchase, will not authorize the repudiation of a bargain, unless it is proved that it existed before purchase, or was grafted on a chronic lesion previous to it. And it is thus that we find intermittent lameness and chronic affections of the lungs prominent among the "vices rhedibitoires" of Continental laws of warranty.

Considering now both what you will permit me to denominate the English and the French laws together, we shall no doubt find much similarity in the two cases mentioned. The result may be about the same, but how much simpler and more satisfactory otherwise, professionally considered, the latter, in view of the performance of the duties and the execution of the trust placed in our hands. To comply with our English laws we must certify to the existence of a condition which can hardly be found, either in man or horse—*perfection* in the abstract and literal sense of the word—and expose ourselves to no end of perplexity and trouble in the pursuit, while for the fulfilment of the more rational and practical provisions of the Continental laws, we are only required to detect within a certain period of time the presence of a few designated diseases, or the manifestations of a few definite symptoms. The English law obliges us to detect one of all diseases, the French code asks us to discover at the time of purchase or previously, or within a given period from the delivery, any one of the following diseases and pathological conditions, viz.:

Speaking at present for the horse only—periodic ophthalmia, glanders, farcy, immobility, pulmonary emphysema, intermittent lameness of long standing, intermittent hernia and chronic diseases of the thoracic organs, roaring, and some peculiar form of cribbing.

And there is another point which I am sure will, in your estimation, count in favor of the Continental mode of examination. It refers to the time at our

disposal for the completion of our task. Indeed, what time is allowed to us for the formation of our judgment, and for the preparation and the delivery of our certificate? A very insufficient time, as we all know. It may vary from a few minutes to perhaps a few hours. Is that sufficient? How in such a length, or rather such a "shortness" of time, are we to detect some of the special forms of disease, peculiar intermittent lameness, roaring, perhaps intermittent hernia, epilepsy, &c. In the European law from nine to thirty days, according to the "vice rhedibitoire" looked for are allotted to the buyer, who thus has ample time to satisfy himself of the quality of his bargain, and thus also the veterinarian has a reasonable opportunity to detect an unsound condition, which, according to our English mode, becomes impossible.

In fact, Mr. President and gentlemen, it seems to me that in the superiority which I have endeavored concisely to point out in the European legislation on this subject, we are inevitably brought to the following conclusion:

Under a reformed régime, when it is once established, we shall have no more fear of contradictory certificates—one of them asserting soundness to-day, to be followed by another, affirming unsoundness four or five days later, and *vice versa*—no more danger of opposing opinions amongst veterinarians employed as experts who discredit one another, and the general profession likewise, by contrary announcements of the presence or the absence of morbid conditions; no more decisions of judges in the courts of law directly in opposition to those of practising veterinarians; and, above all, no more doubts, or at least a reform of opinion in respect to the supposed and generally imputed dishonesty of every man in the community who chances to have a horse for sale.

In respect to the consideration of the means by which such a law, after being properly framed, could be made practicable, I see no reason why such a thing might not be effected in this country as readily as it is in the various European states, if we will but bring ourselves to profit by their experience and follow their example in framing our laws and putting them in execution, as they have done and are doing.

But I have already held your attention too long, and the subject is so exhaustless that I am almost tempted to ask you, paradoxical as it may seem in me, not to discuss it. I yet consider the matter to be one of such importance to all parties interested, and see so much injustice to be reformed, so much opportunity to do good both to buyers and sellers, and so fair an opening for securing a benefit to ourselves in the elevation of our profession, in the performance of this special duty of the examination of animals on purchase, that I can scarcely bring myself to suspend the discussion. I trust to your good nature to forgive the detention to which I have subjected you, and to attribute it wholly to my interest—which I am sure you share with me—in the subject which I have endeavored to illustrate.

President Huidekoper introduced Dr. Olaf Schwartzkopff, Professor of Veterinary Medicine in the University of Minnesota, who read the following paper:



## NATIONAL AND INTERNATIONAL MEAT INSPECTION.

BY OLAF SCHWARTZKOPFF.

GENTLEMEN :—No occurrence in the history of the United States has had more significant relation to the veterinary profession of the country than the repeated endeavors of the Legislatures of several States to make meat inspection laws. Although these State laws have proved inefficient and have not been sustained, it is not because the principle of such laws is wrong, but because the sanitary principles involved have not been sufficiently comprehended and guarded. Still, the movement in this direction has awakened great public interest, especially among agriculturists. In consequence Congress has passed a bill providing for an inspection of meats for exportation into foreign countries. While this law is only one step in the right direction, it will, if carried out, benefit the stock raising farmer of this country; and will also advance the cause of the veterinary profession of the United States, a feature which probably was least thought of by most of our national legislators.

Under these circumstances, then, it becomes us to use this occasion to discuss the principles which should govern sanitary meat inspection laws both at home and abroad.

In dealing with the subject I will not enter into the history of meat inspection, but only remark that it is not at all a modern idea, as stated by some newspapers and agricultural journals. In ancient times, it was, of course, a religious rite, while it now belongs to sanitary science. Nor will I refer to the literature on the subject, which is quite comprehensive in some European languages. But I shall step at once into the proper theme and ask the following questions :

I. Is meat inspection necessary, and is it a sanitary measure ?

II. What meat shall be regarded as wholesome for human food, and what as unwholesome ?

III. How shall meat inspection be carried out ?

I. The history of medicine tells us emphatically that there exists an intimate relation between our health and our use of animal food. It is an established physiological fact that an albuminous diet gives the human organism greater energy. While thus wholesome meat may be regarded as of the greatest importance from the standpoint of national economy and also as one of those indirect civilizing powers, yet meat from diseased animals brings forth many and dreadful dangers to society. Not only may we become temporarily sick by eating flesh of animals which were suffering, for instance, from a disease accompanied by high fever, and through the meat acquire those more or less injurious animal parasites such as tape worms and hydatides of the lungs and liver; but even life may be directly menaced with danger from the use of trichinous pork or meat from tuberculous cattle or hogs, or from the most dangerous group of diseases in this direction, septicæmia and pyæmia.

But the general public can have no sufficient knowledge of these facts; it is impossible for the masses to acquire this particular knowledge in the other engagements of life. Individual self-protection seems impossible, consequently it falls upon the government, State or general, to provide a protection for our health and life alike in this direction, as is done in other matters of a sanitary

nature. For this reason meat inspection becomes a sanitary precaution demanding the attention of State and local boards of health.

II. In dealing with the question, "What meat shall be regarded as wholesome and what as unwholesome," I think it is essential that we should distinguish between inspection ante-mortem and post-mortem. I do not mean that we should separate these two inspections, for in all critical cases both are required for an intelligent decision. But in looking over the approved systems of veterinary police of the foremost European countries we find that provision is made in most of them to directly forbid the consumption of meat of certain diseased animals. The reason for this action seems to be, first, that the use of meat in certain diseases is usually fatal; and secondly, that if such meat be used the speedy extinction of certain infectious diseases is almost impossible.

Besides this, we know from statistics in meat inspection that in certain diseases the meat undergoes during life such alteration as to render it, without question, unfit for human food. In these cases we should not allow the regular slaughtering of the animals under any circumstances, but see that the carcasses are effectually destroyed. In other diseases the examination of the living animal combined with post-mortem inspection is necessary to enable us to properly decide whether the flesh may be used for human food or for industrial purposes only, or should be totally destroyed. Still there remains a great variety of diseases in which the determination of the wholesomeness of the meat depends entirely upon an examination post-mortem. So large is the number of these diseases that some veterinary officers of the great public slaughter houses count them as being about 90 per cent. in the common routine of business.

With these points in view I will undertake to make a classification of the diseases demanding special attention in the practice of meat inspection.

I.—*Diseases in which animals should be condemned, killed and the carcasses effectually destroyed.*

(1) Anthrax. (2) Rabies. (3) Septicæmia. (4) Cattle Plague. (5) Glanders. (6) Small pox in sheep. (7) Swine plague and hog cholera. (8) Unborn animals.

II.—*Diseases in which slaughtering may be permitted to ascertain whether the whole or a part of the meat is fit for human food, or to be used for industrial purposes, or to be destroyed.*

(1) Foot and mouth diseases. (2) Tuberculosis in cattle, hogs and chickens. (3) Actinomycosis in cattle. (4) Icterus. (5) Milk fever in cows. (6) Hydrathorax and ascites. (7) All diseases which are combined with high fever, general emaciation and debility, for instance: pneumonia, enteritis, uteritis, etc. (8) Overheated and too young animals, which should be kept for further examination.

III.—*Diseases ascertainable only after slaughter, and in most cases by the use of the microscope.*

(1) Parasitic diseases of meat: *Cysticercus cellulosæ* in hog and deer; *cysticercus cellulosæ tænia med.* in cattle; trichinosis of hogs; actinomycosis of hogs; sporospermia and muscle distoma of hogs. (2) Parasitic diseases of those which are used as human food: brain, heart, lungs, liver, kidneys and organs intestines. (a) Brain: *coenurus cerebralis* in cattle. (b) Heart: the different

cysticerci. (c) Lungs: *strongylus micrurus* in cattle; *strongylus filaria* in sheep; *strongylus ovis-pulmonalis* in sheep; *strongylus paradoxus* in swine; *echinococcus*. (d) Liver: *cysticercus tenuicollis*; *echinococcus*; *distoma hepaticum*. (e) Kidneys. (f) Intestines: Tapeworms and other intestinal worms that can be easily removed by turning the intestines and cleaning them with water.

This tabulation of diseases may serve for general purposes until through further scientific research certain diseases are better understood. Also it is sufficient, as long as we limit ourselves strictly to the question whether meat is wholesome or unwholesome for human food. But it is sometimes asked, if certain meat is of a proper nutritious quality. This raises another question, whether such jurisdiction belongs to veterinary science at all. It is probable, that if meat inspection should become developed in this direction, the chemist will be the proper man to decide. But if we pursue meat inspection within the limits of veterinary science, we are strictly in our line of work, and will come across very few difficulties. Still there occur cases which will not fit into the classification as suggested above, neither can any classification or direction as yet be made that will be a complete guide in all cases. For this reason alone, if not for others, it is obvious that only qualified veterinarians should be employed for this sanitary work; men who will decide such cases according to their knowledge of pathology, men to whose sphere of knowledge and judgment the whole question naturally belongs. And this will lead us to question III.

### III. How shall meat inspection be carried out?

The practicability of a systematic inspection of meat and the efficient control of the meat supply requires:

(1) Proper legislation to regulate the inspection and supply of meat. (2) The erection of public abattoirs. (3) Men of special scientific training to act as inspectors.

Without these provisions combined, any attempt at meat inspection will have very little value as a sanitary measure. We have witnessed the enactment of the so-called meat inspection law in the States of Indiana, Minnesota, Colorado and the Territory of New Mexico; these laws were called meat inspection laws, while they provided only for an inspection of the living animals in the stock yards, which consisted mainly in a superficial glance at the animals by the inspector from a distant point, condemning certain animals bearing conspicuous, but often harmless blemishes and overlooking others affected by dangerous maladies. On the whole the performance amounted merely to a counting of the animals for the legal fee per head. I will read an account of such inspection from a newspaper slip.

After discussing the enactment of the law, the reporter writes: "The inspector can inspect one thousand two hundred hogs and six hundred cattle a day without trouble. How does he do it? The inspector, be it known, doesn't feel any pulse, look at any tongues, apply the stethoscope or go through any hoodoo incantations in determining the health of a steer, hog, sheep or calf. He just sizes the animal up, and if there is anything wrong, he says he will see it instantly. In the case of cattle, which it is known are on the market for slaughter, he looks them over when they are weighed. It is also at the scales that all sheep

and hogs are inspected. As they are driven on the scales they are counted, and again as the gates are opened and they troop off. The inspector stands up on the fence and if he sees a hog which does not wiggle about as though he felt tip-top, he is singled-out and rejected. This is how animals whose flesh is intended for human food, are inspected under the new law."

It does not need any comment on our part to show the absurdity of such inspection. But it works injury to the public, who believes it is now protected from diseased meat and that no change of such law is needed. The butcher and stock dealer rather favor such inspection, as it does not cause them any loss or inconvenience. But we meet with the most vigorous opposition on the part of these very men when we declare the necessity of inspecting the slaughter house and the process of slaughtering and dressing. This they regard as an encroachment upon their private affairs. We may go all over the country and we will find that entrance into the slaughter house is not usually allowed, and we should not blame the butcher for this, for the slaughter house is his *sanctum sanctorum*. Here he polishes his meat and makes the most of those manipulations which prepare the meat for the store. While it does not necessarily follow that anything wrong is done, and while I am personally convinced from years of official intercourse with butchers that in the main they are honest men, still there are some of them who are not so honest and who will use without scruple diseased meat even if they know it to be dangerous. In the slaughter house, then, is just the place for the sanitarian to enter into a careful inspection; here he may often detect numerous pathological conditions which he never could have found in the living animal.

But even this is not the ultimatum of inspection; to accomplish our full purpose, we have to follow the meat into the store and direct such arrangements for its handling and storage as may be demanded by hygienic precaution, and especially in seasons favorable to the development of micro-organism. To do this, and to do it efficiently, we need such laws as will recognize and meet the emergencies just mentioned. While there must necessarily be left a certain liberty as to the decision of the sanitary officer, it is desirable that he have, as a basis for his action, a well defined law which can be understood alike by him and the butcher and the stock dealer. Such law is not only essential for the execution of meat inspection, but it will also save the butcher and the sanitary officer needless dispute and misunderstanding. The more elaborate such law is formulated, the better it will work. It must define in unmistakable terms the duties of the sanitary officer and the butcher. And above all, such law needs the advice of scientists, as well as of the lawyer. It is one of our foremost duties to watch the development of these new laws, to instruct the public about the proper principles involved, and to use such professional influence upon legislators as to produce an efficient law. If this is done quietly, but persistently, we cannot fail to produce much good.

The question for us to consider now is, where can meat inspection be carried out? Whoever has had the chance of visiting a slaughter house, such as are found scattered all over the land in city or country, must have felt disgusted at the prevalent condition of such places. Not to speak of the total absence of any hygienic arrangements, the unclean manner in which they are kept makes

them places of horror. Gentlemen, I feel sure that no meat inspection is possible nor advisable in such places ; we cannot be expected to perform our duty in blood and dirt up to our ankles. If civilization should be extended anywhere, it is into the slaughter house. But looking at this matter as leniently as possible, it remains a duty to condemn these places and to demand the erection of public abattoirs by the community. No expense is too large, no sacrifice too heavy to accomplish this end. The plan, location and erection of such public abattoirs should not be decided upon without the advice of a sanitarian and an architect who can properly apply the principles of hygiene to such buildings.

As to the question, "Who should be recognized as the proper expert in meat inspection," there can be but one answer, namely, the veterinarian. To successfully perform both ante-mortem and post-mortem inspection, requires a through knowlege of the physiology and pathology of our domestic animals and their relation to the human race. As the physician is too much of a specialist to be compelled to pursue these studies, the other medical profession should consider them. This is specially proper since every educated veterinarian diligently follows the discoveries of medical science, whereas, the physician is largely ignorant of what is going on in veterinary science.

To employ laymen as meat inspectors, such as stockmen and butchers, is a great mistake. I know from personal observation that such men will decide according to their feelings and prejudice rather than from their knowledge. If asked why they condemn such and such meat, they will say, "I would not eat such flesh." The argument of some authorities on the employment of laymen is, that many veterinarians do not know more about it than these men. Now that is erroneous. We may candidly admit that many veterinarians of this country are not up to a high standard of education ; but however little they may have gained at the college, they have gone through a systematic course which will at least enable them to know why they do so and why not otherwise ; and, may I ask, is there any profession in the United States which has a uniform standard of education ? Is there not the same difference of general and professional accomplishments in physicians, lawyers and ministers ? Still, however great may be at present the perplexity about everything belonging to meat inspection in the heads of some of our legislators and their followers, we may feel sure that the whole question will solve itself in time on its natural basis, and that the veterinarian of the United States will duly occupy the same position as a sanitarian that he effectually holds in European lands.

Gentlemen, having discussed the principles of meat inspection, it is not difficult to apply them to national or international legislation. In the United States there seems to be the tendency to deny the right of a single State to enact laws requiring meat inspection within its own limits, as this naturally restricts interstate commerce. It seems, then, as if the national government is the proper authority to carry out such laws. It does not matter much from our professional standpoint, whether the national government or the States pass such laws. But if there be no uniform law otherwise, we should unite our influence in behalf of the interested public, to secure a national law, which carries with it so much more authority and efficiency. It is to be deeply regretted that the bill recently introduced into the Senate by Senator Paddock providing for

national inspection of both cattle and hogs and their products intended for transportation from one State or Territory to another and for foreign exportation has not been passed by Congress. This bill, with the exception of a very few points, was well adapted to serve the purpose and would have been a judicious move. The failure of this bill to pass leaves us still without a national inspection law. Still, necessity will demand this or a similar measure in the near future.

There is an increasing disposition on the part of our legislators to promote exportation of meat. That this can be accomplished only when we have a proper inspection throughout our country, and one which foreign nations can accept as adequate, is evident to any one familiar with the strict meat inspection laws of European countries.

Possibly if meat inspection is brought into international negotiations it may undergo some slight alterations, but its principles will stand, and we shall have to adopt them.

The Edmund bill which just passed Congress provides for the inspection of salt pork for exportation. I will read you Section I. of this bill:

“An act providing for the inspection of meats for exportation, prohibiting the importation of adulterated articles of food or drink, and authorizing the President to make proclamation in certain cases, and for other purposes.”

“Be it enacted by the Senate and House of Representatives of the U. S. of America in Congress assembled, That the Secretary of Agriculture may cause to be made a careful inspection of salted pork and bacon intended for exportation, with a view to determining whether the same is wholesome, sound, and fit for human food, whenever the laws, regulations, or orders of the Government of any foreign country to which such pork or bacon is to be exported shall require inspection thereof relating to the importation thereof into such country, and also whenever any buyer, seller, or exporter of such meats intended for exportation shall request the inspection thereof.”

This is the text referring to meat inspection, and then follow nine long sections prohibiting the importation of adulterated food and drink. While this may be evidently very necessary, it has no direct logical connection whatever with a meat inspection law, and will look very suspicious in the eyes of the unprejudiced foreigner. But to come back to the section read, is it not a mockery on what has just been stated at length? This alleged inspection of salt pork can only have reference to microscopical inspection, and you know with me that it is a most hopeless task to attempt such inspection. From the process of curing with salt the meat becomes so hard and rough that it is difficult, almost impossible, to prepare it for microscopical examination. Such methods are of very little value; indeed for a careful microscopical examination are useless.

How then can we expect under such law, that the foreign restrictions will be withdrawn? And if exportation should be attempted under such circumstances, what will be the result? Undoubtedly a second inspection on the part of foreign countries, which will add this expense to the price of the pork. The poor classes in several European countries are anxious to buy American pork, but will not be able to do so if the pork is not cheaper than that of the home country. This must reduce our export trade to almost nothing.

The European countries which import American pork are Germany, France,

Norway and Sweden, Denmark and Italy. All these countries have at present restrictions against American pork. All these restrictions are based on sanitary grounds ; whether correctly or not, I will not here undertake to discuss. Now what change can we reasonably expect to result from the Edmunds law ?

Gentlemen, in closing my paper, I wish to appeal to your continued interest in the questions just discussed, and I especially appeal to the deans of the veterinary colleges of this country to provide for separate lectures on meat inspection, with practical exercises in public abattoirs ; that if called upon we may have men able to undertake the responsibility which is connected with this sanitary measure. There can be no question that we shall witness some important legislation in regard to meat inspection in the coming years, and it should be our professional pride to intelligently advise our legislators as to the proper scientific standpoint of such laws.

As veterinarians we are doubly interested in this question. It concerns us as members of the general public, but to a much greater degree does it interest us as members of the veterinary science, to which it gives greater opportunities and adds greater responsibilities.

Dr. Berns, of Brooklyn, was introduced by President Huidekoper, and read a paper as follows :

#### MOSS AS A SUBSTITUTE FOR LINSEED MEAL AND HOT WOOLEN CLOTHS.

BY GEORGE H. BERNs, D.V.M.

Perhaps there is no class of remedies better known and more frequently used than poultices and fomentations.

Their efficacy as remedial agents and their physiological as well as their therapeutic actions are so well recognized and understood that it would be a waste of time to even refer to them.

There is hardly a day but what all of us order a poultice to a horse's foot or prescribe hot fomentations to some other part of the body for the purpose of relieving pain and suffering, and it will be admitted that their sphere of usefulness is almost unlimited in the practice of medicine and surgery, yet in very many instances are we obliged to dispense with them owing to our inability to apply them effectively, for there are many locations on the body of an animal where no poultice or fomentation can be applied or kept.

Linseed meal is practically the only substance used in veterinary practice to make poultices, and while it is safe, retains heat and moisture well and answers the purpose in the majority of instances, it has many disadvantages.

1st. It requires considerable skill and time to prepare and properly apply a linseed meal poultice.

2d. They are bulky and heavy and tend to sag down from their own weight, and on that account cannot be applied to many parts of the body.

3d. They are rather dirty and during warm weather are apt to become foul unless very frequently changed, and it requires time and labor to clean the parts after a poultice has been removed.

Hot fomentations are usually made by saturating clothes or woolen blankets

in hot water and applying them to the desired parts while hot and covering them with oil silk or some other air-tight material, and in regions where they cannot be kept in position we content ourselves with ordering the parts simply bathed with hot water.

That these methods are extremely laborious, troublesome and in many instances inefficient is admitted by all, and I have no doubt that many attempts have been made to improve upon them.

Spongis piline is perhaps the only substitute that has been offered to the profession as a convenient vehicle to apply heat and moisture, and while it does its work well it is hardly applicable in veterinary practice on account of its high price and its many other disadvantages.

To devise some other means of applying fomentations and poultices than the antiquated methods referred to has occupied considerable of my time and attention for a number of years, and upon trying a variety of substances I found one, which I considered of sufficient value to experiment with for months, and I am pleased to say that my time and labor has not been entirely wasted, for in my own practice I have employed it extensively for a long time and with most satisfactory results.

The substance referred to is a herbaceous plant found in swampy and shady localities in many sections of the United States and is known as moss. Dr. Muhlenberg, of Lancaster, Pa., in 1827, describes over 170 varieties, all of which possess the power of imbibing and retaining large quantities of moisture and seem to have a peculiar resistance against the actions of ferments, for I have never known moss to become foul or offensive no matter how long or in what way employed. Some of the mosses are extremely coarse, with woody stems and ill developed short leaves. The plant I have adopted as a substitute for oil meal and woolen cloths, is a very fine, long, thin-stemmed vegetable, with soft, slender long stems and branches well coated with large serrated leaves.

Carefully conducted experiments have proved that this variety at least is positively non-irritating even to the most delicate and sensitive surfaces, but that it possesses properties which I believe will in time give it a prominent place among the remedial agents of the United States Pharmacopœia.

1st. Moss possesses the power of retaining moisture for a longer period than any other substance known, and if properly protected by air-tight coverings it will retain heat fully as long if not longer than ground flaxseed.

2d. If applied to the body in a proper manner it can be kept saturated without removal or re-application, thus avoiding a great deal of time and labor to attendant, risk of exposure and annoyance to patient.

3d. It can be rendered antiseptic, astringent, anodyne or irritating as desired by saturating with such solutions, and affords a most convenient and efficacious means of dressing wounds.

4th. It is soft, pliable and suitably elastic and will adapt itself to almost any position where no poultice or surgical dressing can be applied.

5th. It is cleanly, cheap, and if properly prepared, extremely easy of application.

Recognizing these properties and realizing the difficulties almost always met with in placing and retaining in position poultices, fomentations and surgical



dressings, I conceived the idea of placing the moss in sacks or bags, quilting or tufting them to guard against displacement, and making them into shapes and sizes to fit almost any part of the body. After months of experimenting I am at last in a position to place before the veterinary profession a complete set of moss fomentation pads, which have in my practice proven to afford a most convenient and efficacious means of applying fomentations or surgical dressings. The result of our labors in this direction has been the production of thirteen different styles and shapes of moss pads, intended to cover those parts of the body that most frequently require surgical attention.

I will not tire your patience by giving a minute description of all of them, but would beg your indulgence for a few moments longer to say a few words upon one or two of them. One of the most useful is probably the foot pad. It is made in the shape of the foot, and from  $1\frac{1}{4}$  to  $1\frac{1}{2}$  inches in thickness. Saturated in water or any medicated solution that may be indicated and placed under the foot of a horse, kept in place like any other poultice, it will adapt itself immediately to the irregularities of the plantar surface and afford an equal distribution of pressure to the parts, thus preventing in a great measure the formation of exuberant granulations, so troublesome in all cases where it becomes necessary to remove portions of the horny sole. It forms a soft and elastic cushion and means of rest, and in laminitis it affords ease and comfort at once, it will remain where placed, is perfectly clean and easily re-saturated without removal by simply dipping the foot into hot water or any medicated solution, which it absorbs quickly and afterwards retains. In my practice the use of linseed poultices for foot troubles has been almost entirely abandoned, for the moss pad is cleaner and in my experience far more efficacious.

The pastern and ankle pads are next to the foot pads most frequently used, and that they will adapt themselves to the conformation of the parts and allow an equal distribution of pressure is demonstrated by a few specimens that have been used and allowed to dry on a horse's leg. For a full description of these as well as the other pads, I would refer you to our pamphlets on Moss Fomentation Pads.

President Huidekoper introduced Dr. J. C. Meyer, Sr., of Cincinnati, Ohio, who read the following paper:

#### COTTON SEED CAKES.

BY J. C. MEYER, SR.

The utility attributed to this article, as a food supply for domestic animals, is, according to my estimation, worthy of consideration.

The acknowledged good results obtained, both in hygiene and nutritive processes, by feeding oil-cake meal, the residue from flaxseed, seems to have paved the way for the consumption of cotton seed cake meal.

The few accounts I have read as to its efficacy as an aliment were very favorable, but my first, and thus far only, acquaintance with it appeared to me of sufficient importance to demand more than a superficial notice.

The reason for the above opinion is based on the suspicion of its having caused a disease, with fatal termination, of twenty or more oxen in a Kentucky distillery in May, 1889.

On the 12th of said month I was requested to inspect the stock in question, and if possible ascertain the nature and cause of the disease, and, to facilitate matters, make a few post-mortem examinations.

I found one hundred or more oxen under one roof, all of which, with a few exceptions, were in fair condition. The building was on elevated ground, and well ventilated.

The cadavers which I expected to examine had been cremated, as had all the others which died before, it having been forgotten to give contra orders.

The general impression was that the malady was abating, both in numbers and force, as there were but three sick animals, two of which were on a fair way to recovery; these would not admit of a close examination. They walked about in their pens, eating some hay occasionally, and drinking water, but paid no attention to mixed food of still-swill and cotton seed cake meal; one even attempted to ruminate several times. The alimentary deposits were soft, and of a yellowish-red color.

The third steer, sick about thirty-six hours, showed symptoms for the worse; he wore an anxious look, would not move voluntarily, lifted and shifted his feet quite often; shivered almost continually in the muscular region of the extremities. Respiration, 100; temperature, 104°; circulation, 80. White foam dribbled from nose and mouth incessantly. He drank water greedily, but refused all nourishment; had a fit of vertigo, but did not come to a fall. Evacuations from the bowels were mushy, thoroughly mixed with blood, and turned black in fifteen to twenty minutes.

The foreman of the stable stated that the majority of the animals which died showed about the same symptoms as this one.

The first signs of their being sick was drowsiness, salivation, refusal of all liquid food, desire for clear water, and evacuation of soft, reddish manure. As the disease advanced, a dizziness would very often bring them to a fall, and when down, a tremor of the extremities was present; they then would get up, and move about again; but upon the third attack, generally remained down until they expired several hours after. The disease lasted from two to three days.

Permission to kill this steer was granted. When walking to the place of destruction, a distance of about sixty feet, the animal was attacked with such a dyspnoë that he stopped suddenly, stretched his head and neck, protruded the tongue, straddled his legs to prevent his falling, and coughed up some foam, which seemed to relieve him, so that he was able to finish his trip.

A single stroke from a broad-headed hammer felled him, after which he was depleted in butcher's manner.

The blood looked like arterial blood, and coagulated in a very short time; the subcutaneous vessels yielded a darker colored fluid. The muscles had a natural aspect. Nothing abnormal was visible on the surface of the alimentary tract. The rumen contained a considerable quantity of partially liquid food; the inner lining was softer than usual; the other three stomachs contained comparatively little food.

The first two and the larger part of the third division of the small intestines were normal. The last fourth of the ileum and the whole tract of the large in-

testines contained a bloody, mushy, almost odorless mixture. From the last fourth of the ileum to the terminus of the alimentary canal, the mucous membrane was stained with blood, which could be washed off, save in the cœcum and first half of the colon, where this sanguinous abnormality penetrated the mucosa and muscular coat to such a depth that it might be termed a bloody infiltration.

Spleen and liver normal, as were also the kidneys. Gall-bladder filled with green-colored bile of molasses consistency.

Water-bladder contained a yellowish translucent urine.

Lungs and heart were healthy, except that the bronchial tube and trachea were occupied by a considerable amount of white foam.

The brain was not damaged in the least by the death-blow, unless a few congested vessels seen in the arachnoida were the result of it. Whether it was softer than normal cannot be maintained. As there was nothing unusual in the animal's locomotion, an examination of the spinal cord was not made, there being little hope that its exposition would lead to any important disclosures.

The foreman remarked that in all the cadavers he opened he found nothing that attracted his attention, except white foam in the respiratory apparatus and bloody contents of the bowels.

He attributed the cause of this strange disease to the second consignment of cotton seed cake meal, which he was then feeding; it was coarser, of a different color, and less pleasant to the smell than the first. The cattle did not take hold of it with relish, some refused it altogether, a number of them took sick, some died, and others recovered. He informed the Superintendent of his suspicions, but the food was not changed until the death reports increased daily.

A superficial inspection of this food showed that it consisted of coarse crushed hulls, of a brown color, covered with downy fibrous substance, which at first sight looked like mold, and very likely mold was associated with it.

Whether these cattle actually succumbed to this cotton seed cake meal is an open question, still in revising Dr. E. Potts' description regarding the properties of this cake and meal, in Vol. 1. page 428 of the *Thierärztliche Encyclopædia*, edited by Dr. Koch, Vienna, I notice an intimation which will admit of such a conjecture. After giving a brief classification of the different kinds of gossypium from which the seed is obtained, he says: "Upon the extraction of the oil, these cakes are of various qualities, and not always fit for food.

Cotton seed cakes, meal, etc., are brought to market containing, besides the hard, indigestible ground hulls, a good deal of cotton fibres, and are therefore fit only for fertilizing. If utilized for food, they call forth violent disturbances in the digestive organs, and upon continuous feeding, may eventually cause death, as the cotton fibres ball together in the alimentary tract, thus producing constipation and inflammation of the bowels.

Cakes made from hulled seeds are most nutritious, digestible and palatable. The better quality (unhulled) cakes are made from the Egyptian seed, it being easily freed from fibres; it is pressed whole, and as an article of food, is much sought after in England.

Those cakes (unhulled) full of fibres are of a dark brown color; and those containing less fibres are, on the other hand, of a greenish color, but soon turn

brownish. Both these last named kinds, as a rule, contain, in addition to the hulls and fibres, other impurities, such as minute particles of iron from the presses, etc., and are often, as are all other cakes stored in damp places, impregnated with mold and other organisms, through which poisonous alkaloids (ptomaines) seem to form in the cakes to such a degree that their consumption may have a fatal effect on cattle.

The good quality of hulled cakes, the so-called American cotton seeds cakes, are of a bright yellow color; if they be of a dark color, they have either been pressed while they were too warm, stored in a damp place, or spoilt in some other way and therefore of doubtful quality. Well prepared cakes should have an agreeable odor, a nutlike sweet taste, be hard and dry. Cakes and meal made from sound hulled seeds are eaten with relish, and promote the thrift of all domestic animals used for draught or food.

To milch cows is given daily 3 lbs., sometimes as high as 5 lbs.

To draught oxen 3 to 4 lbs.

To oxen for fattening purposes as much as 6 lbs.

To sheep and swine  $\frac{1}{2}$  to 1 lb.

To horses  $\frac{1}{2}$  lbs.

Finally, the main inducement for bringing cotton seed cake into widespread use, is its cheapness."

#### DISCUSSIONS.

President Huidekoper having called Secretary Hoskins to the Chair, discussion of Dr. Salmon's paper was invited. There being no discussion of Dr. Salmon's paper, discussion of Dr. Huidekoper's paper on the Contraction of the Horse's Foot was called for.

Dr. Meyer, Sr. : The remarks I have to make on Dr. Salmon's paper are simply to say that I was very much pleased with it. But I would like to know what he has to say about Dr. Salmon's statement that these organisms are in the animal's body, and that there are also developments going on in the outer world. I would like to know how it is about the germs being developed partly in the animal's body and partly on the outside.

Dr. Salmon : I do not know that I can add very much to what I have already said. What we do not know about Texas fever germs would make a very much larger book than what we do know. I have said all we would like to say about it. We do not know anything about the life of the germ outside of the body; we have not been able to recognize it. I do not know where it grows, nor how it grows. We simply know that when a pasture is infected with these germs, the infection seems to be intensified as the season goes along; and I know that the cattle take the germs

more rapidly into their systems later in the season than earlier in the season. What form they assume and how they grow and what are the conditions necessary to their growth, or how they are taken into the system we are still in ignorance. Those are questions it will take several years to solve.

Dr. Meyer, Sr.: In respect to lame horses, I think we would do well to send them to the Chicago Sanitarium. I have seen so few lame horses here. I guess it is because the streets are so level that there is little occasion for spraining and the like.

Chairman Hoskins: If there are no further remarks on that paper we will pass to the paper of Dr. Liautard on Veterinary Jurisprudence. I hope that the question of veterinary jurisprudence has not been so thoroughly exhausted that there are no remarks on that subject from as many States as we have represented here to-day. In some of them it must be that judicial decisions have already been rendered which will add interest to the consideration of this subject.

President Huidekoper: If no one has anything to say, I would like to remark that this is a matter which should be thoroughly gone over and brought up again at the next meeting. I have had some experience myself with the Continental system which Dr. Liautard regards as better than our English system based on the words, "Soundness" and "Unsoundness." It is one that certainly is of great interest both to the purchaser and the seller.

There is one point which Dr. Liautard did not bring out, and that is the Continental system with its prohibitory vices which the law charges the seller with, unless he is specifically relieved therefrom by the written contract of the buyer, in nine or thirty days as the case may be. Then too the law assumes only to cover the hidden vices. All open troubles, spavin, ringbone, or anything of that kind which can be seen by an ordinary expert, they assume that the buyer ought to see and if he is not sufficiently expert then he should employ a proper one to make the examination for him. That allows the veterinarian to be in turn a great deal more lenient with the dealer. It allows the veterinarian to recommend the purchase of a horse with a visible blemish, which will not injure him, as in the case of a small

spavin or ringbone, which allows a horse to do a hard day's work without a lame step. It allows the sale of such an animal with the purchaser having a knowledge of that. Where an ordinary certificate uses the word sound and unsound, you would be compelled to condemn a perfectly useful horse having such a blemish. I think with a little unanimity on the part of the profession it would be comparatively easy to obtain suitable legislation looking towards a change in the system of examination. Personally, I find it entirely practicable in many examinations to carry it out by the permission of the seller and buyer. In several dealers' stables in Philadelphia where I practice, examinations are made in that way and I do not use the words soundness and unsoundness as they occur on my ordinary certificate, but I scratch them off the paper and state the blemishes of the horse and whether I consider he will be useful or otherwise. I would like to hear the subject discussed.

Dr. Atkinson: I would like to inquire of Prof. Liautard whether the Continental law that he speaks of is statutory or common law?

Dr. Liautard: They are special laws which are common laws for that purpose. I will interpolate into my paper that in regard to prohibitory vices, they are referred to, so long as the animal was warranted not being free from them.

Now, I do not know that a great deal of discussion can be had on this subject for the simple reason that it is so broad. It is an important step to ask that we should work for the establishment of laws different from those which have been in existence in courts for many years. It may seem presumptuous on my part to present the subject to you, yet at the same time what I have said is the result of many hours of thought, and I have the regret of knowing that in many cases, by rejecting the animal, under the law, we were doing a great injustice to all parties concerned, and that those horses which we were obliged to condemn under the law would be perfectly satisfactory and give good useful service to the buyer. Now, that subject seems to me of great importance. We cannot discuss it fully because there are so many points to be considered. It seems to me, as our President has suggested, that we

should not allow the paper to go by—the paper may go by, but for pity's sake, do not allow the subject to go by. It is of as much importance as the paper read by Dr. Schwarzkopff; it is a national subject belonging to veterinary science and we ought to take hold of it. I think it should be kept before the Association.

Dr. Atkinson: I do not know that I fully understand exactly what is meant. I have given the subject some thought and it seems to me that a uniform law in this direction would be difficult to obtain owing to the peculiarities of our form of government. Laws as I understand them, come from two sources; there is statutory and common law. Common law is the decisions of the courts that have been handed down from time to time and are based on the ideas of justice that obtain at one time or another, some of them coming to us away back from the time when kings had power to issue edicts. Statutory law is the enactment of the different State Legislatures and our National Congress. Enactments generally are the result of some emergency which the common law does not provide for. Unless they are the result of such an emergency the statute law is liable to fall into disuse.

Now, under our constitution, I believe it would be impossible for the National government to enact any law in relation to contracts and their enforcement between citizens of the same State. So that any uniform practice would have to be established by the statutory enactment of the respective States. As it is now, the decisions have nearly all been rendered under actions for what is known as breach of warranty, implied or expressed, implied by some statement that the seller had made to the purchaser, verbally or in writing. In proceeding under a breach of warranty it becomes necessary to establish that the warrant was expressed by the seller and was acted on in good faith by the purchaser, and that the animal was not up to the representations made. Under our State law (Wis.) and I presume it is the same in other places, the purchaser would have the right to proceed in one of two ways, upon a breach of warranty, either return the animal or thing purchased and demand full return of the purchase money, or retain it and sue for the difference between the real value and the value which he paid. Now, in applying this law, we want to make it

suit all cases. If there is special legislation that touches it, for instance if a man sold an animal without warrant, we will say a horse that was sick, that proved to be affected with glanders, under our law he would not need to establish that it was represented to be sound at the time it was purchased. A special act of our Legislature makes it unlawful to sell such an animal, and the purchaser may recover the price paid and other damages.

I do not know how uniform legislation could be had under our present State constitutions. I have ventured thus far to express my views on the subject, although they may not throw much light on the discussion.

President Huidekoper: The Chair would like to answer one of Dr. Atkinson's propositions. Fortunately in the West, most of the States have laws concerning contagious diseases. Take the illustration that he has just made of glanders. But during last spring in Philadelphia a case was brought into court of a glandered horse that had passed through the hands during the period of two years of some six different purchasers. Each one in turn had sold the animal with full knowledge that she was glandered, several of them knowing that they and their neighbors had lost horses through contact with this animal. It was decided in the Pennsylvania court this spring that there was no law in Pennsylvania that forbid the sale of a glandered animal, so that for Eastern States we need additional legislation very decidedly.

Dr. Atkinson: That covers exactly the point I had in view, that where the common law is not sufficient to meet emergencies, statutory law must be enacted. In our State it is a criminal offense to sell an animal affected with such a disease, and the seller is liable to criminal prosecution, fine and imprisonment. That is a case where the statute is in aid of the common law and supplies the deficiency. Under the common law the seller would be liable for a breach of warranty or failure of consideration of the contract.

President Huidekoper: Remarks are now in order on Dr. Schwartzkopff's paper on the Meat Inspection Law. He has presented a very important subject and I would like to hear from some of you State Inspectors on the subject. Dr. Salmon, won't



you give us something on the question of meat inspection, as you have just been doing some National meat inspection?

Dr. Salmon: If there is any light I can throw on the subject I would be happy to do so; but I hardly know what points the gentlemen are interested in. If any care to ask me any questions, I will be glad to tell them anything I know about it.

Dr. A. H. Baker: I would like to ask what is the status of the meat inspection of American cattle in England?

Dr. Salmon: I found that to be rather peculiar in certain respects. There are a large number of cattle landed at three or four different places where they have large cattle sheds and docks and suitable accommodation for the cattle, but they have but one inspector at each place where there are sometimes a thousand cattle landed in a day. The inspector stands on the dock and looks at the cattle as they come in from the ship and if he sees anything the matter with them as they pass, such cattle are run off into a pen by themselves for future inspection. That is about the end of professional inspection, although I think there is an arrangement between the inspectors and the butchers that in case any marked defects are found, they are to be reported. If there is such an arrangement, it is more or less *sub rosa*, and I do not know to what extent it can be relied upon. It struck me that the inspection made over there of our cattle by English inspectors was not very thorough, although perhaps as critical as we would care to have it made.

Of course, as you know, the Department of Agriculture has succeeded in making arrangements with the British Government by which we have placed three inspectors over there, one at London, one at Liverpool and one at Glasgow. They are there of course, only by the courtesy of the British Government; we have no right to send men there to make an inspection on British soil, but it was done by our Government because there had been a great many reports of pleuro-pneumonia being found among American cattle on the other side. Some of these reports were made in regard to cattle shipped from parts of the country where we had no evidence of there being any contagious pleuro-pneumonia, and it seemed very desirable that our Government should have these men

there to look after the matter for two reasons. First, there was a possibility that there had been an error in diagnosis. Those who have had experience with pleuro-pneumonia know how difficult it is to make a diagnosis, when you have only one of these animals, and no way of tracing the history of that animal. You may find the condition of the lungs which resembles pleuro-pneumonia, but which also resembles other diseases. We all know that pleuro-pneumonia produces a peculiar effect to the appearance of the affected lungs ; but those peculiarities are also found in lungs which have received their irritation from other germs and sometimes by other agents. So that it can be hardly claimed to-day that these symptoms are always those of contagious pleuro-pneumonia. Of course, when you take those symptoms of pleuro-pneumonia and couple them with other characteristics which we generally see, then we begin to have very positive evidence of the diagnosis. At any rate, it seemed to us there might be an error in diagnosis, and on the other hand it was possible that there might be pleuro-pneumonia going abroad from our country from our cattle shipped from sections of our country where we did not know the disease existed. It was in the West before it was found, and it is just as possible it is out here somewhere as it was then, although if it had been here for any length of time we would have known it. Yet there is always a possibility, and for that reason it has seemed best to have our representatives on the other side.

It may be said that the British inspectors do not claim to have found any contagious pleuro-pneumonia among our cattle since February last, and since that great progress has been made in the eradication of the disease on this side. The fact is there is very little pleuro-pneumonia in this country. I may almost say we have had none for the last six months, and as soon as it has been found here the animals have been slaughtered and the disease eradicated. But in this country as in other countries, the disease continues to appear in certain places. One reason for its re-appearance was indicated to you in the views which I showed here this morning, that stables which have been infected were retained with the infection in them, and in some of those cases it was not until the places had been utterly destroyed, the soil dug up and thoroughly disinfected

by saturating the soil with corrosive sublimate that we have finally succeeded in getting rid of the disease. After such a treatment we have had no second outbreak. But it takes time to find these different places where the disease lurks, and it also takes time to get at all the old chronic cases, and that is why the disease still continues to reappear. We have had but very few cases in Brooklyn, so that it hardly seems we could have exported the disease.

That is about the status of the matter as it is at present. England wants our cattle for several reasons, because of its economy among others. This is an important matter to our people, and if they can be made to understand the good work which the veterinary surgeon has done for the shippers in this country, the time may come when they will fully appreciate it.

Dr. Weber: I would like to know what is the probability of our importing the disease from England to this country?

Dr. Salmon: That is putting the shoe on the other foot. England, of course, wants to avoid any importation of the disease. We hope, of course, that by showing a clean bill of health on this side, there is no danger from pleuro-pneumonia by shipping our cattle over there. England has a good deal of pleuro-pneumonia in Ireland and in Scotland. They have been working on it over there for quite a number of years without making much progress. At the last session of Parliament they secured a new law which transferred authority in cases of pleuro-pneumonia, from the local authorities to the general authority in London. Now they hope to go ahead and get the disease eradicated.

We have our quarantines against the cattle from England, and will of course maintain them until they show a clean bill of health. I do not think there is much probability of importing the disease in cattle that come through our quarantine stations, yet, there is a bare possibility that the cattle may contain the infection, although if our officials are alert it would be almost impossible for the disease to escape detection.

I find those who know most about pleuro-pneumonia are the most conservative concerning our ability to absolutely wipe out the disease. It was said to me by one of the highest officers of the British Government that if they succeeded in ridding the country

of pleuro-pneumonia in six years, or double the length of time it required in this country, they should be happy.

Dr. Baker: Do our inspectors inspect the animals before or after they are killed?

Dr. Salmon: All American cattle landed in Great Britain are slaughtered on the docks within ten days after being landed. Our inspectors are very careful to examine so far as possible the American cattle as they go off the ship, and they have the promise of the British inspectors, that in case they find anything which they consider to be pleuro-pneumonia, it will be brought to the attention of our inspectors at once and they will be given every opportunity to examine the cases and submit their report to our Government. Our inspectors do not see the cattle killed. It is absolutely impossible for any one man, at any one of these places to see the cattle killed, there are too many of them. There is a string of slaughter houses a half a mile long, in Bedford, where they are killing cattle all the time during the greater part of the day. A man might watch two or three houses, but he could not watch them all. Probably it would take fifty men to see the organs of all the cattle slaughtered. At Bedford some of the wards are immense institutions. I was surprised to see what permanent buildings they had erected; we haven't anything in this country to compare with it.

Dr. Baker: Another point I would like to have brought out is whether the English Government require all animals to be inspected after slaughtering, or in case of disease are they dependent upon the courtesy and honesty of the British butcher to report it.

Dr. Salmon: As I said before, their inspectors do not see the cattle slaughtered. Of course if they find things which they are unable to detect during the life of the animal they must depend on the butchers. What arrangements they have or how much they can depend upon them, I cannot say.

Dr. Liautard: Do the English and American cattle go to these same wharves.

Dr. Salmon: There are cattle from other parts of Europe there, and there might be a possibility of the American cattle mingling with cattle from Holland and possibly other parts of the country.

Dr. Baker: Under these circumstances it is possible that pleuro-pneumonia may be taken there by these Continental cattle and the trouble ascribed to the shipments from America.

Dr. Salmon: That is possible, but I do not think very likely. The great bulk of our cattle going to Great Britain are run into pens by themselves and they are handled by a class of men entirely different from those who handle Continental cattle. I do not believe there is much possibility of their being mixed. They are kept separate until slaughtered, and until slaughtered those who handle them know where the cattle come from; and I think those who handle them are rather prejudiced in our favor than against us. I do not think any mistake of the kind referred to has occurred.

Dr. Clement: I was very much interested in the paper of Dr. Schwartzkopff; having had some experience, I know that a man with his training makes him an authority such as none of us would pretend to be on the subject. Germany is far ahead of any country in the world in sanitary science. Certainly its abattoirs are far superior to anything in this country, France or England. In Berlin, I believe, he said a great number of inspectors are employed, and undoubtedly one trained in such an institution gains information which is hardly possible in this country. The abattoir system, however, is absolutely necessary, in my opinion, to a proper conduct of a system of inspection. Unless we can have abattoirs it is hardly of any use to have a system of inspection of the food-supply in our cities. The classification which he adopts, however, I do not quite understand. If I remember right, he classifies the diseased under three heads. First, he puts swine-plague, and, second tuberculosis, and others. Of the first class of diseases, he says that the carcasses should be totally destroyed. Of the second class, he says only the part affected should be destroyed. Now it seems to us that those diseases which are not directly communicable to man are less dangerous as articles of food than those diseases which are directly communicable to man; therefore I do not see why those which are classified under the first head for total destruction are placed there, while of those of the second only a part of the carcass is destroyed. If I remember right, he speaks of the classification referring to the temperature of the

animal, to a certain extent, before death. Undoubtedly a high temperature is very obnoxious, but it is certainly not as injurious, in the opinion of many of us, as would be the eating of the flesh of animals containing germs of diseases which are directly communicable to man. I would like to ask him to kindly explain again the basis of his classification of those diseases which he includes under the several heads.

Dr. Schwartzkopff: The question of Dr. Clement is correct. The diseases were classed under three heads. First, such as are prohibited by ordinary police regulation. Some they are not allowed to slaughter at all in Germany and Austria and parts of Switzerland, and I think in Italy, although I am not much acquainted with such laws. Prof. Liautard will understand that France has no such laws, neither has England or Russia.

Dr. Liautard: Yes, France has the same laws.

Dr. Schwartzkopff: Yes, all over the continent those laws prevail, with the exception of Russia and in England.

Under the second head I have classed those diseases where slaughtering is permitted, to ascertain whether the whole or part is fit for human food, to be used for industrial purposes, or to be absolutely destroyed. Some parts of the animal may be given for consumption, or may be used in the rendering-tanks, or be totally destroyed. There are three different doors which are open to the sanitarian.

As far as tuberculosis is concerned, we all know that animals in which tuberculosis is found should be destroyed, that is, from a theoretical standpoint. But we all know that cattle shipped from several sections of the country there will be found animals more or less affected with tuberculosis, some of them in such a small degree that although they show tuberculosis, otherwise the animal is in a perfect condition for food. I personally adopt the views of this country; but so far as Germany is concerned, from which I largely adopt this view, the German authority on these sanitary matters allows the use of cattle diseased with tuberculosis, for instance, if in one part of the lung. As soon as tuberculosis is shown—which is very easily recognized by the affection of the lymphatic glands and through the body, it is generally considered that the animal is unfit for food, and it is so without doubt.

Dr. Clement: I wanted to get at the basis of your classification. I quite agree with you that cattle affected with tuberculosis in a small degree are not injurious as an article of food.

Dr. Schwartzkopff: Excuse me; I should have said, of course, that the diseased parts are destroyed.

Dr. Clement: It seems to me that a little too much stress may be laid upon some of the other diseases which render the animals unfit for food. I do not think it will do any harm, for instance, to eat pork from a pig which died of hog cholera, even though the animal was very sick.

I would like to ask Dr. Schwartzkopff if diseased meat is sold in Germany, and so specified? If from an economic standpoint they do not condemn the whole animal, but pass it as diseased, and sell it to the people, who know what they are buying and take their chances?

Dr. Schwartzkopff: Dr. Clement is right. There are laws in Southern Germany which provide for a classification of the meat. In the first place, perfectly sound meat for the market; then there will be given meat, for instance, from animals with the swine-plague, which are known not to injure human beings, but which, rather from feeling that such meat is not from perfectly sound animals, persons would rather not eat. Such meat is classified and sold cheap; not under a general law, but local ordinances of the municipality, from what you would call here aldermen. (Applause.) These are simply ordinances which allow this meat to be sold to the poorer classes. In this country you will hardly like that very much. In America the citizen is a much stronger person than in most of the countries in Europe, with the possible exception, perhaps, of England. Here all classes of people want good sound meat and nothing else. It will take a long time in this country to establish such a law as it has taken a hundred years in Germany to bring about.

Dr. Williams: The two diseases of actinomykosis and tuberculosis are subjects of importance to us in Illinois. Dr. Clement has said it was impossible to condemn all these animals: Illinois has found it possible to condemn them, and has done it very successfully. We have some lively fights on hand on the subject of

actinomykosis. We probably have more animals affected with this disease than any other part of the country. We have had, for instance, in one series of cattle sheds here about one hundred cases of actinomykosis, and we had quite a little trouble right here in Chicago on that subject.

Dr. Atkinson: It occurs to me, in considering this subject, there is one feature lost sight of. It has always seemed to me that while an animal was on its four feet it was a fit subject for the veterinarian, but when hanging up by the quarters for food, it was more properly a subject for the Board of Health to deal with. I have had some experience. Five years ago I was appointed State Veterinarian of Wisconsin, and was somewhat enthusiastic, as all beginners are. Among the first cases I met was a party that had a drove of two hundred hogs nearly ready for the market, in which hog cholera had made its appearance. I happened to be visiting in the neighborhood; he heard I was coming, and he attempted to ship them. I succeeded in getting him to take them back to his farm. The old man protested that it meant ruin if he had to lose those hogs. He said he knew if he could get them into the Chicago market he could realize on them. I expected I would be sustained by the State Board of Health. The law provided that I should co-operate with them. As soon as I got home I notified the Secretary of the State Board of Health, and some six or eight months afterwards I asked him if he got my letter. He said, "Yes; we took it up at our last meeting." I says, "What of it?" "Well," he says, "there is nothing to show that hog cholera does people any harm, and we concluded it was not a matter for our Board to interfere with." Now, how far would I have been sustained had I gone on and acted in that matter? I do not believe veterinarians can act alone.

I had another experience almost similar. This subject of tuberculosis has attracted a great deal of attention. It was made the subject of discussion in a meeting of veterinarians, sanitarians and Board of Health officers held at Springfield, last fall, and the question of how far our jurisdiction would go was brought up by myself at that time as it is now. We called in the Secretary of the State Board of Health and asked him what his



opinion was. He said it was not established that they were contagious diseases. He said there was a theory advanced that they were but it was not generally accepted in the medical profession that they were. If the veterinary profession is going to place itself on record as saying that that fact is established, that they are contagious diseases—I believe there is some doubt whether tuberculosis is a disease or not—but in the other, there are some diseases transmissible from animal to animal and to mankind. This is a wide subject and any attempt at securing legislation, it seems to me, would be more properly attempted when supported by the Board of Health after we have reached that point. It may be that the veterinarian has better fields for observation, but for my own part I have always looked at the medical profession as one of the sources from which we can gather information in that direction.

Dr. Schwartzkopff: These remarks are very interesting; but I think this is one of the most profitable fields of work for the veterinarian.

As to the question of actinomycosis, as I said before, theoretically it is not contagious. Some time ago there was a dispute going on and I expressed my views, which I am sorry were contrary to the belief of most of you in this country. Personally I like to go where you go, I do not want to put myself on record as opposed to you or your ideas, but when I am forced to do so I must be candid and say I do not believe it is contagious, and I base my opinion on my own experience as well as my theoretical studies in handling cattle, in the Berlin slaughter houses. As long as you are dealing with the living animal it will always be difficult to decide some of these questions. The only way it can be done in many cases is by post-mortem, to determine whether the meat is fit for human food or not. There may be some cases in which the meat of the animals would be dangerous and in others where it is not. This is a question of importance and you can be sure that you will be compelled in the next few years to form your opinion on this matter.

Dr. Salmon: This is a question I am considerably interested in and I am glad it has come up. I only wish the Association would

make it a special subject for discussion at the next meeting. I would like to see the members come in prepared to present their views and criticize the opinions of others and thus bring out the truth as it is always brought out by a conflict of opinion. It is only by discussion and a comparison of notes and by the interchange of ideas that we finally sift the wheat from the chaff and get down to the truth about a matter. Meat inspection is a matter that it will not be many years before it will prevail in every locality in the country. It is a National question and a very important one. As a profession and as members of the National Veterinary Association we should have clear ideas upon the subject and be ready to give reasons for the belief that is within us. I think that some members of our profession have been rather hasty in arriving at conclusions. I believe the inspection should only condemn the animal in case the red flesh is affected and in case the tuberculosis is disseminated throughout the body. Some claim, that if the lung is affected the flesh of the animal is safe. Now, is that a safe conclusion for us to reach? Have all of us reached the point where we can say there is no possibility of danger in consuming the meat of an animal which has tuberculosis in the lung? If it is true that these germs circulate in the glands and in the udder, why don't they circulate in the meat that is used for human food? I say it is too early for us to say that the meat of an animal is safe for human food, because we are unable to find the germs of these diseases in the lean meat. If we find these germs in the blood why do we not find them in the red flesh? If they are in some parts they must have circulated in the different parts of the body. How do we know how far they go and how do we know that they are not in all parts of the carcass, having circulated through it?

As to the diseases which are contagious, there is a strong feeling against the use for food of animals so diseased. It is very hard to draw the line. Sometimes you have a case of acute-pneumonia; you do not know the temperature, you do not have the temperature raised enough so that you can say there is any rise in temperature. Who can say that there are not poisonous elements all through the body, which may be very injurious to people partaking of the flesh.

There are a great many facts to be taken into consideration on this question of meat inspection and I hope before the next meeting our observations will be made very thorough. We have just entered on the threshold of our knowledge of contagious diseases and it is too early to come to any positive opinions, especially when those opinions run rather counter to the opinions which have heretofore prevailed.

Dr. Meyer, Sr.: In regard to actinomykosis I have been reading the slaughter house reports from Berlin and it appears that there the diseased part is thrown away and the other portion allowed to be consumed. And even in tuberculosis I believe the rule has a limit of the same description. Another theory is that where only a portion is affected, it is diseased through and through. So I guess we ought to make a distinction between that which is to be consumed and that which is not to be allowed.

Dr. Hawkins: I will state what has been done in the city of Detroit. When the Health Officer discovers a case of actinomykosis, he orders the destruction of that animal and of course that ends it right there.

Now with regard to inspection of meat. In our city, to give you an idea of what our inspection is, our present meat inspector is a cigar peddler. He knows as much about healthy and unhealthy meat as a hog does about book-keeping. In Michigan two years ago there was introduced into the Legislature a bill providing for a live stock inspector for the inspection of hogs and cattle brought into the different stock yards. The only way we have now to prevent the sale of diseased meat on our market is through the local inspector, who is appointed by the Board of Aldermen. If he is a good Democrat he stands a pretty good chance of getting in. That is the way our inspectors are appointed.

Dr. Baker: I do not know that there is much Democracy in contagious diseases in Illinois; but as regards the disposition of cases of actinomykosis here as stated by Dr. Williams, we have been able to deal with it. In Illinois the officials have acted under the advice of their veterinarians and we look upon actinomykosis as a disease which renders the animal unfit for food. In a

late issue of the *North American Review* there is an interesting article on the longevity of Americans living in the central portion of the United States and it appears that it is greater there than in any part of the world to-day. That in a great measure is due to the character of the food eaten by the inhabitants. They are more particular as to the quality of the meat and the fruit they consume and consequently they are freer from those diseases which lessen the longevity of the race.

While we have not actually found the germs of actinomykosis, though considerable microscopic work has been done here, yet we have found them in most of the internal organs, and lung, liver and intestines, quite a considerable distance from the digestive tract. There is no question in our opinion but what it is diseased meat and while I do not know positively that it does not exist in the muscles or the red flesh that is eaten as lean beef, the safest way is to guard against any possible contamination from that source by condemning it on general principles as diseased meat.

Dr. Faust: I think the Jewish people give us a fine illustration, looking at them as a race from beginning to end. Would a Jew eat a piece of meat affected with actinomykosis? (Cries of yes! yes.)

Now then, as far as tuberculosis goes, does he eat that? I think not. I think the gentleman that just spoke expressed the true sentiment that we should keep away from danger and condemn it as unfit, destroying everything that is diseased. We have plenty of good meat in this country and don't want to eat diseased meat. If we should ever come to that point when, owing to a dense population we are obliged to eat diseased meat, we can then consider how injurious it will be.

Dr. Williams: This question is of great importance and it has been difficult for me to keep still. We wish to further discuss this subject and therefore I move that the discussion be now closed, but that a committee of three be appointed by the Chair to consider the subject of actinomykosis and tuberculosis, which committee shall submit a report at the next meeting of this Association.

Dr. Clement: I would amend that motion by adding that the committee also consider the subject of meat inspection.

The motion was seconded and carried unanimously.

The Chair appointed as *Special Committee on Food Inspection* Drs. W. L. Williams, O. Schwartzkopff, A. W. Clement.

The Secretary announced the banquet at the Palmer House at 8 o'clock this evening.

Secretary Hoskins: I move you, Mr. President, that we extend a vote of thanks to the Western Local Committee for the preparations they have made and for the successful way in which they have carried out the details for this meeting.

Seconded. Carried unanimously.

I also move that a vote of thanks be extended to the retiring officers of 1889 and 1890, which we neglected to do on the retirement of our President, who gave us such very efficient service during the last year and who contributed so largely to the success of this meeting, the most successful we have ever held. 109 members have been in the room at one time.

Dr. Atkinson: I move to amend by extending a cordial vote of thanks to all the retiring officers, as well as those who have been re-elected.

Seconded. Carried unanimously.

Dr. Adair: I move you that a vote of thanks be tendered to Dr. Salmon for the very able manner in which he presented his paper and the instructive way in which he illustrated his ideas by the use of a lantern.

A Member: I move you that we also include a vote of thanks not only to Dr. Salmon but to Dr. Liautard and Dr. Huidekoper and Dr. Schwartzkopff and Dr. Meyer and Dr. Berns, or in other words, all those who have instructed and entertained us by their very able papers.

Seconded. Carried unanimously.

On motion duly seconded, the meeting adjourned sine die.

#### THE BANQUET.

The banquet of the United States Veterinary Medical Association was held on the evening of the 17th, at the Palmer House. At 8.30 P. M. the guests gathered around a beautifully set table, laden with beautiful beds of flowers and running vines of ever-

greens, and led on by their genial Toast Master, Dr. C. B. Michener, of New York City, did ample justice to the many delicacies placed before them. After coffee and cigars had been served, letters of regret were read from Dr. Wickersham, and President John G. Shortall, of the Illinois Humane Society, followed by many pleasant and telling remarks from those assigned places on the toast list. "The union and fraternal relations created between the East and West," were fittingly referred to by Drs. Hoskins and Barker; "The profession and its power and worth" by Dr. Lyford; "The Colleges, their growth and early history, their past and present, and their outlook of the future" were suitably referred to by Professors Liautard and Withers. "The aid rendered the profession by journalism" was pungently and sweetly dwelt upon by Prof. Huidekoper. "Veterinary Sanitary Work and National Veterinary Work, and the part played by veterinarians throughout our whole land, in all the places assigned them," were commented upon and highly eulogized by Drs. Paquin and Salmon. "The place, power, influence and good work achieved by State Veterinary Associations" was thoroughly treated by Dr. Tait Butler, and his concluding remarks embraced a beautiful tribute to the future of our National Association. "The little good achieved, the great dangers involved in improper legislation for veterinarians in their respective States" was most thoroughly and justly commented upon by Dr. Atkinson. "The needs and hopes, the high appreciation by the majority of the qualified veterinarians of the Army of the work already done on their behalf," was fittingly referred to by Dr. D. Lemay. "Agriculture in its broad importance to the world, and to our Nation," with an object lesson from the good things of the table, were ably alluded to by Prof. Perian, who closed his remarks with suitable allusions to the relation of veterinarians and agriculture; after which a jolly song by Dr. Griffin and the 2 A. M. chorus of the "Kiamensi" quartet closed the grandest meeting the Association ever held.

# AMERICAN VETERINARY REVIEW,

NOVEMBER, 1890.

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## EDITORIAL.

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TOASTS AT OUR LAST BANQUET.—General custom—value of answers—those of the United States Veterinary Medical Association—“*The Colleges*”—our answer—comparison between English and American degrees—similar conditions and prospects—creation of the Royal College of Veterinary Surgeons in England—need of a National Board of Examiners for the United States—American veterinary medicine will need a national institution—the *Veterinary College of America*—its influence upon the elevation of the profession and harmony between its members—“*The Veterinary Medical Press*”—duties of the editor—duties imposed on veterinarians—“*Veterinary Sanitary Work*”—“*National Veterinary Work*”—better attention to meat inspection—let the subject be better treated in veterinary schools. BORROWED FEATHERS.—Duties of veterinary colleges—various titles and degrees—those who have claim to it—those who claim it without right—a letter as evidence—more in hand—one title in England—let us have but one—let it be “M.V.C.A.”—this to be the motto of the American veterinarians. PASTEUR INSTITUTE.—Report of results since its opening in February 1890. ANNUAL MEETING OF THE ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.—Interesting papers to be presented.

TOASTS OF OUR LAST BANQUET.—Every one is cognizant of the custom among banqueters, in many countries, of supplementing the discussion of the solids of the feast with toasts, proposed by some of the guests, followed by responsive remarks by others of their number. Usually, the answers to any one toast contain very little pith or substance, and are scarcely worth reporting or considering, having no other use than to serve as occasions for the prolongation of the passing hours of social enjoyment. But again, there are times when both the sentiment proposed and the remarks in reply have a sensible and important bearing upon the matters which have

brought the convivialists together, and become useful reminders of the serious matters which had occupied their attention not long before, but had been partly displaced from their minds while enjoying the bodily pleasures of the festal board. The banquet which closed the twenty-seventh meeting of the United States Veterinary Medical Association in Chicago showed no departure from this usage, and included amongst the rest, three toasts which had an important bearing on the labors and objects of that great meeting. The first of these, "the Colleges," offered by toast master C. B. Michener, was responded to by ourselves and Dr. Withers, of Chicago. In our remarks we brought forward some views and conclusions which, in our opinion, ought not to be overlooked by the profession, and for the repetition and insistence of which, at this time, we trust we shall be pardoned by our readers. After passing in review the attempts which had been made for the establishment of colleges in this country, and considering the results which followed the operations of those which, after a more or less limited existence, had "departed this life," we proceeded to a reference to those which are at the present time engaged in active work, and continued with an examination of the results obtained in the last twenty-five years, when from a class composed of one student for the whole of the American continent, we had reached the present period, when over one thousand students may be counted in the various schools of North America, with the natural result of several hundred yearly graduates. We were thus brought to consider the prospect of the harmony which might be expected to prevail, at least amongst those of the graduates who are influenced by a truly American sentiment, and took the opportunity to compare the future condition of things in this respect to that which existed some years ago in England, when several schools, more or less private in character, as ours are to-day, and probably for that reason, had fallen into a state of greater or less mutual ill-feeling, which had developed into a spirit of antagonism amongst the graduates of the various schools, and which we thought must have been more or less detrimental to the well-being of the profession in England. Our English



cousins found a remedy for that evil in the creation of a single veterinary college, the Royal College of Veterinary Surgeons, from which all veterinary practitioners are now obliged to graduate, without reference to an English or a Scotch education.

After presenting these points to our audience, we passed to the consideration of what we thought was intended in the suggestion made at one of the previous meetings by Dr. C. P. Lyman, viz., the idea of a consolidation of the profession, by a union of all the graduates, and therefore of all the schools, and suggested the possibility and hope that a similar measure might be adopted in the United States, by the creation of a National Board of Veterinary Examiners, to be appointed by the Department of Agriculture in Washington—a Board which would be entirely independent of all the schools. With this suggestion we closed our remarks, and as a final clincher of our sentiment, proposed a toast to the “foundation of the *Veterinary College of America*.”

What possibility or practicability there may be in the suggestions we have thus made, remains to be seen. It is our fixed conviction that some plan of this nature will undoubtedly become necessary at an early date, and we feel satisfied that this will be the best, and possibly the only way by which certain desirable, if not necessary changes can be made in the curriculum of the various schools. It would be the means also of circumventing the possible unprofessional rivalry already existing, and which has been manifested by some of the respective graduates, the removal of which will greatly benefit the profession and prove an important step towards its elevation in public consideration. That our life may be spared to witness the day of the convening of this Board of Examiners ready to act, is, we hope, not a vain aspiration.

The second toast of unusual interest, “The Veterinary Medical Press,” was answered by Professor R. S. Huidekoper. After recalling the life and death of a few journals which have been started in this country, the speaker paid his compliments to the journals now in existence, and enlarged upon the obligations imposed by their existence on each and every

individual practitioner. There was in the remarks of Dr. Huidekoper an important call on those upon whom these obligations rest. He reminded his hearers that no matter how willingly and laboriously the editor of a veterinary journal might exert himself, his work could never be what it might and ought to be, in the absence of proper aid and co-operation at the hands of the members of the profession, by the contribution of original articles, or reports of interesting cases, and of any matter, in fact, relating to veterinary science and the important relations which it bears to other interests now prominent and influential in the United States.

Yes, Dr. Huidekoper is right, and we, all of us, who aim to perform our duty towards the veterinary press must take his remarks into serious consideration, and endeavor to work together, one and all, for the creation of a truly American veterinary press, which shall be a credit and necessity to the country.

“Veterinary Sanitary Work,” and “National Veterinary Work,” were responded to by Dr. P. Paquin and Dr. E. Salmon, who chose for the principal topic of their remarks what may to outsiders be considered as a new departure in our profession, viz., the subject of meat inspection. The remarks made by these gentlemen were largely embodied in the discussion which had already taken place during the sessions of the official meeting, and concluded with an acknowledgment of the wisdom of the action taken by the Association in the appointment of the committee, a summary of whose labors are looked for in a report which will be submitted at the next meeting. Many other subjects were “toasted” at this great banquet, as many of our readers are already aware. Others might justify more or less comment, but the importance of the suggestions involved in the three principal ones to which we have alluded, entitle them to preference for prominent mention, and must justify our reconsideration of what was said at the Palmer House on the 17th of September, 1890.

**BORROWED FEATHERS.**—The necessity for some changes in the mode of granting degrees by veterinary colleges in the

United States seems to us to be assuming a character and degree more and more urgent, and it seems to us, also, that the day is fast approaching when the need for the creation of a single supreme authority for the exercise of the right to issue degrees will be acknowledged and acted upon, with the assent of all parties rightly interested in the questions involved in the matter. While our veterinary colleges are every year turning out young men of good education, and well equipped for the performance of their professional responsibilities, this is not the only duty devolving upon these institutions, and which constitute the only true obligation they have contracted towards their students and towards the public who look to them for the protection of their live stock. Truly, the young graduates who get their parchments are all right, and to them belong the rights and honors of their V.S., their D.V.S., or D.V.M., whatever it may be—and to them alone that right belongs, by the authority of their diplomas. But are the names of those who have this exclusive right well known to the public? How can one tell whether the certificate of any individual who represents himself as a graduate of this school or of that college is authentic or not? Do even the alumni of any one school know, and can they identify all those who may have graduated from the institution whose diploma they hold?

Look at the following, which by chance came into our hands, and which we copy verbatim:

“Pleas send me one of your illustrated alphabetical register of veterinary instruments and books also one blank diplome of the ————— college as i am a gradyate of that college and have got mine nerly ruined and want to have it coped of i also will give you a order in next letter for several books for students of mine.

We have besides this, numerous letters of inquiry from persons who want to know whether this or that man is a graduate of this school or of that college, and in many cases the objects of inquiry are found to be falsely pretending imposters, operating to the public detriment by their untruthful representations, and inflicting no small injury upon our graduates, as well as reflecting discredit upon the schools.

There can be but one way to remedy such an evil, and it can be, if not entirely, at least to a very great extent counteracted. This is to have but one title and a single responsible and recognized body to grant it. The M.R.C.V.S.E. and M.R.C.V.S.L., are done with in England; let the V.S., the D.V.S. and the D.V.M. be done with in the United States. Let us have no more graduates from the East or from the West, but give us instead, a body of AMERICAN VETERINARIANS, all of whom shall be members of the VETERINARY COLLEGE OF AMERICA—M.V.C.A.—a title worthy of the profession of this great country, and of which we know its holders will be justly proud, with a pride which will stimulate them to bear high and firmly and advance nobly the standard of American veterinary science.

NEW YORK PASTEUR INSTITUTE.—We have received the following through the kindness of Dr. Paul Gibier, the Director of the institute.

I forward you the results of the preventive inoculations against hydrophobia performed at this institute since its opening, (February 18, 1890).

To date six hundred and ten persons, having been bitten by dogs or cats, came to be treated. These patients may be divided into two categories.

1st. For four hundred and eighty of these persons it was demonstrated that the animals which attacked them were not mad. Consequently the patients were sent back after having had their wounds attended, during the proper length of time, when it was necessary. Four hundred patients of this series were consulted or *treated gratis*.

2d. In one hundred and thirty cases the anti-hydrophobic treatment was applied, hydrophobia having been demonstrated by veterinary examination of the animals which inflicted bites or by the inoculation in the laboratory, and in many cases by the death of some other persons or animals bitten by the same dogs. *All these persons are, to-day, enjoying good health.* In eighty cases the patients received the treatment *free of charge*.

The one hundred and thirty persons treated were from the following States:

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New York.....	64	Maryland.....	1
New Jersey.....	12	Maine.....	1
Massachusetts.....	12	Kentucky.....	1
Connecticut.....	8	Ohio.....	1
Illinois.....	9	Arizona.....	1
Missouri.....	3	Iowa.....	1
North Carolina.....	3	Nebraska.....	1
Pennsylvania.....	3	Arkansas.....	1
New Hampshire.....	2	Louisiana.....	1
Georgia.....	2	Ontario, (Can).....	1
Texas.....	2		

ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.—The eighth annual meeting of this Association will be held in Chicago on the 5th and 6th of November. A number of interesting papers are to be presented, among them “Scrofulous Otitis in Foals,” “Castration of the Horse,” “Infectious Abortion in Mares,” “Navicular Disease and Neurotomy,” “Parturient Eclampsia in the Mare,” “Simple Fever followed by Purpura,” and many others. Also Reports of Cases of unusual interest.

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## ORIGINAL ARTICLES.

### CASTRATION OF THE CRYPTORCHID.

By R. MIDDLETON, A.B., D.V.S., Stuttgart, Germany.

The castration of cryptorchids has lately again become the theme of literary discussion, and is one of the subjects minutely described by Bang in his *Surgery*. The numerous occurrences of cryptorchismus in draught horses can easily account for the fact that this operation is often resorted to in France, Belgium and Denmark; while in Germany, the northern lowlands excepted, we are seldom offered the opportunity of collecting extensive experience on this subject. Therefore it has been erroneously viewed as a doubtful undertaking when performed upon horses of English and Arabian descent.

The communicated observations upon the coarser animals by veterinarians in the above countries prove the opposite; in the last year I myself have had sufficient proof that the undertaking in full-bred horses is practicable. The various methods

of the operation have often been described. I will, then, only consider the points which, in my opinion, have not previously been accorded the place which their importance merited.

In Denmark, as in Belgium, the inguinal canal has been selected by those having most to do with cryptorchids; the old method by Cæsarian section is seldom applied. From my view the former merits the preference, inasmuch as the testicles are more easily, and at once more directly, reached. When these organs remain in the abdomen they are regularly situated in the vicinity of the superior inguinal opening, and exceedingly seldom in other than this region.

The operation per the inguinal canal also deserves the preference when, before the operation, the location of the testes in the abdomen cannot with certainty be recorded; as when they are diminutive in size, and flabby, or when they are situated directly in the canal itself. In this last situation, removal by section of the flank would be seriously difficult, and in case of a narrow inguinal ring could not be carried out without resorting to the other operation and enlarging the ring. I will present the method recommended by Stockfleth and Nelson (Denmark) and lately modified by Bang.

The important problem is the proof of the presence of the testes in the abdominal cavity; this in itself is not without difficulty to the novice. Degive for this purpose introduces the hand into the rectum and therewith glides upon the lateral wall of the abdomen from the superior to the inferior regions. With this, I recommend also the following: Seek the anterior border of the pubis, and about four inches from the linea alba extend the fingers laterally as wide as possible upon the wall of the cavity. As a rule one feels the hemispherical, soft bodies, and can by manipulating with the fingers distinguish the size and outlines. Sometimes when in doubt, the proof is repeated after the administration of a purge; in other cases the vas deferens is followed from the vesicula seminalis to its junction with the organs of generation; which are either disposed in the inguinal passage and can be here detected through palpation by abducting the limb and simultaneously manipulating externally; or they may be felt at the internal inguinal ring,

having the epididymis in the canal. The diagnosis is much easier after evacuation of the bowel.

For eight to fourteen days preceding the operation voluminous feeding is to be avoided; in fat subjects, regular exercise, with a purge now and then; in all cases clysters are to be injected a few hours previous to casting. The less the amount of subcutaneous fat, the easier the operation and the sooner the convalescence. The animal to be operated upon is thrown so that the side to be incised is uppermost. During the administration of anæsthetics, the posterior uppermost limb is removed from the hobble and is to be bound as for an ordinary castration. A sack of straw is placed under the gluteal region so that the rear is higher than the anterior extremity, and so that the patient lies somewhat up on the back.

The limbs are now moistened, for the purpose of preventing dirt, etc., which may be upon them from falling into the wound during the operation; for the same reason a damp cloth is spread around the hoof displaced from the hobble. The inguinal and hypogastric regions are well washed with soap, and subsequently rinsed with a one per cent. corrosive sublimate solution. When one has the time the sheath, some time previous to the operation, should be thoroughly washed. After these prophylactic measures the following processes should occur, in the order detailed.

1. The incision; with the arms exposed to the elbows, and the same, together with the hands and instruments, carefully disinfected, the operator kneels as though about to perform the commoner operation. The external ring is now felt by palpation and an incision is made two inches in length made directly upon it and extending from the anterior to the posterior commissure. I prefer, with Bang, this spot, which enables one to enter the abdomen via the shortest way; some of the Belgian and Denmark operators incise the dartose and scrotum, and consequently are constrained to dissect back the tissues until the ring is reached.

The incision being upon the ring and through the skin, a large vein (post abdominal) is exposed; which if at all embarrassing should be doubly ligatured and cut through.

2. The exposure of the inguinal canal; for this purpose the two index fingers, with or without the thumb, are used; the loose connective tissue is pushed forwards and backwards in the direction of the internal ring. When the fingers are inserted up to the knuckles, the hand upon the intero-posterior commissure is removed, while the index and middle fingers of the other hand are again inserted for the purpose of finding, if possible, the tunica vaginalis, or any portion of the vas. Occasionally a portion of the epididymis is felt in the canal, as a characteristically yielding body. The testicle is easily diagnosed by its form; and when felt the tunica vaginalis is incised sufficient for the removal of the organ. When the globus minor only is discernable, the question arises, if the internal ring be of sufficient size to permit the passage of the generally stunted testicle; to ascertain this, one or two fingers are introduced. When widening of the natural openings is indicated I would advise the tenotome or herniotome. When the testes lie upon the abdominal wall the inguinal canal will of course be found empty, that is, only occupied by connective tissue; on the side of the canal toward the median line soft muscular substances of the oblique internus abdominis is felt, which, if followed, leads to the internal ring, providing one be extant. When the tunica vaginalis fails to appear in the canal, so also generally fails the internal inguinal ring; and the anatomical disposition is precisely as in the female.

3. Perforation of the occluded abdominal wall; there are three possible ways of removing the testicles from the abdomen, through the inguinal canal.

*a.* By perforating the peritoneum and thick connective tissue which covers the situation of the absent or incompletely developed internal ring.

*b.* By thrusting the fingers through the connective tissue behind this ring.

*c.* By lacerating the fibers of the internal oblique towards the white line and close by the side of the internal opening.

I have tried all three methods and prefer, as do the Danish, the last one. The first presupposes the existence of an in



ternal ring sufficiently large, and which may be diagnosed by the yielding character and also by the more or less defined hard connective tissue ring. In my first operation I had the opportunity of removing the organs by this method; in one case I succeeded in grasping the membrane which covered the ring and in drawing it out far enough to cut a small opening with the scissors; the opening so made was enlarged by the fingers and by the aid of my other hand in the rectum I managed to effect the extirpation. The second method is more difficult and is more safe as regards hernia, because the opening is so high. The perforation of the obliquus internus in a direction parallel to the arrangement of its muscular fasciculi, is accomplished with less fatigue and from the close apposition of the sides of the wound the danger of hernia is reduced to a minimum; therefore in my operations, recently, I have applied this method. After being convinced that the tunica vaginalis is absent, and when the internal ring is so narrow that two fingers cannot be introduced therein, the internal oblique muscle is pierced during inspiration by the index and middle fingers. There is no occasion for hurry, and when possible the digits are kept in the wound made, in order to diminish the danger of infectious material from entering the abdominal cavity. On these grounds also the withdrawing of the fingers after perforating the peritoneum is to be avoided; and moreover the wound is not always found afterward without trouble.

4. The seeking of the testicles or their appendages; the first varies in size from a pigeon's to hen's egg; it is flabby and distinguishable from hernia by its limitations; the vas appears under the finger as a hard medium-sized twine string; the epididymus has a peculiar feel, some parts hard, some soft, in fact it is precisely the consistency of a normal and physiological super-testicular body. When the testes are pinched the animal evinces pain, even in narcosis. Whichever of these portions is at hand, it must be firmly grasped and drawn through the artificial (or natural) opening.

Mostly the testicles are found laterally from the perforated spot, and in the vicinity of the pubic border. The most

convenient point to grasp is the globus major or minor. With one hand in the rectum the whereabouts of the testicle is comparatively easy to find out; I have avoided it, however, since the aseptic course of the wound can be very materially interfered with; when the hand is well washed and disinfected and the nails cleaned after withdrawing from the rectum, the "intention" of the healing cannot be influenced. To avoid the trouble of re-disinfection, an assistant who understands the steps of the operation is a good help, especially by aiding per rectum.

When the organ is not found by two fingers the cutaneous wound should be enlarged and the whole hand inserted. The immediately adjacent tissue and surroundings of the internal ring are investigated; when not successful in meeting the testicle here the hand is carried back to the superior face of the bladder: the vas deferens sought out, and followed.

5. Removal of the testicles; for this purpose dressing forceps are fastened upon the cord, which is then ligatured in those portions by sterilized catgut or silk; the cord is now severed below the ligature. The separation may also be effected by careful torsion; I prefer the former, for by it hæmorrhage is certainly prevented, and healing favored. After the testes are removed, and there is assuredly no portion of intestine in the wound, the same is washed with sublimate solution 1:1000; and by means of the interrupted sutures the periphery of the wound is brought into juxtaposition. From six to eight sutures are used and the needle is plunged through the skin and subcutaneous tissues about one-half inch from the edge of the wound. After this the whole region is again washed with sublimate solution and a powder of iodoform and tannic acid 1:3 is strewn over the wound.

After the patient is in the stall a bandage is applied; this is made of saturated oakum (in carbolic solution) or sublimate cotton, which is covered by a triangular linen cloth and the latter fastened to the crupper strap. The sheath must be so disposed as not to saturate the bandage at every micturation.

The bandage is allowed to remain so long as no pyretical disturbance is manifested; the diet consists of half rations of

easily digested food, and the animal is kept in the sling from three to four days.

Should a fever appear, or should the surroundings of the wound be wet or swollen, the bandage is removed, the stitches at the corners of the wound withdrawn and a sublimate or creoline solution irrigation established. The principal danger lies in infection and peritonitis, which inaugurate a septicæmia. Careful disinfection of all things used in the operation does away with this; and when the hands or instruments come in contact with no undisinfected object, there is no reasonable ground for fear. I have noticed that operations performed in the country heal oftener without suppuration than those carried out in a hospital; the danger of infection in the owner's stall, provided it be ordinarily clean, is less than the danger of hospital gangrene in an institution which is not often and fundamentally disinfected.

Upon the thirteen cryptorchids which were operated on last year, I have noted that six cases involved the right, and four the left testicle; in the three last subjected, both organs were concealed. The average weight was five drachms; one nevertheless weighed four and a half and another seven ounces. The two latter were, anatomically, perfectly developed, so that no doubt existed concerning the procreative power. Eight were removed by ligature and eight by torsion; the first method is certainly without hæmorrhage, the last doubtfully so; and since blood destroys healing per primam, the first is preferable.

The first patient operated on last year died sixteen days after the operation from septicæmia, after the healing of the wound up to that time had progressed favorably; this infection was ascribed to contemporaneous cases of gangrene then in the hospital. Another case in which I had removed both testicles died from the same cause associated with abdominal hæmorrhage; this case undoubtedly died of septicæmia, but since this I have always removed the second testicle only after the healing of the wound of the first.

The sine qua non of the operation is fundamental antiseptis and a knowledge of the anatomical dispositions.

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## PUNCTURED WOUNDS OF THE FOOT, INVOLVING THE JOINT.

By Dr. EMERSON.

A paper read before the Massachusetts Veterinary Association.

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The most serious punctured wounds are those occurring at or near the centre of the foot, where the flexor tendon, the synovial sac, or the bony articulation, may be injured.

By the centre of the foot I indicate that part of the plantar surface bounded anteriorly by the point of the frog, posteriorly by its middle cleft, and laterally by the sole, just outside the base. In this section the lateral clefts of the frog seem to be the most common seat of gathered nails. The reason of this is either the anatomical location, or the fact that feet which are otherwise very hard, are here usually soft, from mud and dirt becoming lodged here.

Nail pricks are of such common occurrence that many owners and drivers of horses, and not a few blacksmiths, have an infallible quick "cure" of their own, which they apply in all cases without regard to location or extent of injury. Hence, more than half the cases that the veterinarian is called to have been treated in one way or another for from one to four or five days.

When the owner finds that the animal is constantly growing worse he sends for the veterinarian and tells him what he has done, and how many times he has done it before without ever losing the use of the animal for a day.

Often, in a simple puncture, the soft tissues are so much swollen and the foot so painful, that when the surgeon is called it is almost impossible for him to ascertain just the extent of the injury with his probe. In the locality of the joint it is never advisable to probe deeply unless synovia is already freely discharging from the opening; then I can see no reason why we should not run the probe in as far as it will go, and satisfy ourselves whether there is any portion of bone exposed and roughened.

Of the cases I am about to relate, the first two occurred in my practice at Lynn, and the other two at the Veterinary Hospital at Boston.

*Case No. 1.*—The foreman of a truckman's stable came to me early on the morning of May 8th, 1889, wanting me to come immediately with him and see a horse that he thought had some serious kidney trouble. I asked him to describe the symptoms as he saw them. He said the horse lay stretched out in the stall; attempted to micturate frequently; was breathing fast, and was so stiff he could not move him out of the stall; also that he refused to eat. I accompanied him back to the stable, and on our way there he remarked that two days previous, in the morning, the horse had picked up a nail, but that he had had a pork rind and a leather applied to the foot, and the horse had worked the remainder of the day. As the horse was quite lame the next day, he allowed him to remain in the stable. He expressed great confidence that the foot would be all right if I could only effect a cure of this other disease.

On arriving at the stable an examination convinced me that the wound of the foot was the whole and only trouble. The animal was a bay gelding, five years old, weighing over 1,500 pounds. He was standing, working his near hind leg spasmodically, as though in great pain; he appeared to want to put the foot to the floor, but upon touching it with the toe would jerk it up again. He was breathing rapidly, with his nose elevated and in one corner, and sweating some on the neck and flanks. On my trying to pick up the foot the horse would put it down squarely on the floor, stand on it and jerk the other up. His temperature was  $102.3^{\circ}$ ; pulse 90; respiration, 48.

A blacksmith was called in, and after much hard work succeeded in removing the shoe. The nail had entered just at the side of the frog, and an inch posterior to its apex. Synovia was flowing freely, accompanied with an abundance of rather thin, light-colored pus.

I ran my probe in a little ways, but not to the bottom of the wound; found the nail had taken an inward direction toward the median line of the foot.

I had the horn removed from half of the frog, the bar removed as much as possible, and the sole well thinned. I then

injected the wound with a five per cent. solution of carbolic acid, gave a hypodermic injection of 10 grains sulph. morphine above the fetlock, and left aconite and nitrate of potash powders.

May 9th.—Horse easier and eating; the temperature down to 101°. The soft parts from which the horn had been removed the day before were much swollen, and I thought it advisable to remove more horn, which I did. The synovia appeared to be much diminished, but there was a large amount of pus. Treatment the same as the day before, except that the morphine was discontinued.

May 10th.—Horse about the same in regard to pain. Pus showing a little around the coronet; the wound still discharging synovia, mostly in yellow clots; the soft parts more swollen than before I probed to the bottom of the wound and discovered bare bone, but it appeared to be smooth. I kept the foot through the day in an astringent bath of six ounces sulph. zinc to five gallons of water; applied a thin poultice at night.

May 11th.—Temperature, 101.4-5; pulse, 72; respiration, 20. The pus dark in color and an abundance of it, as well as synovia. The off hind leg was swelling badly, so I had him placed in slings; ordered two doses of opium and camphor, and continued the astringent tub through the day and the poultice at night. Had to keep a man by him all the time to keep the foot in the tub.

May 12 and 13.—Horse about the same. The same treatment continued, and I had the slings removed for an hour each day. The temperature both days was 101.3-5.

May 14th.—Temperature, 103°; pulse, 84; respiration, 30. The horse was, to all appearances, much worse. He would eat but little; he hung in the sling and was finally let down, where he remained quiet for three hours, when he was turned to his sound side, where he rested for two hours and then got up alone after one or two unsuccessful attempts. Opium and camphor given three times. As we could not help him in the tub, a bran poultice wet with white lotion was applied to the foot four times,

May 15th.—Temperature, 103 2-5°; pulse, 96. He had passed a very uncomfortable night, and had been let out of the slings at 4 A. M., but would not lie quietly when down, notwithstanding he was turned frequently. He had made a number of attempts to rise, but was not successful. I probed deeply and found quite a surface of bone very rough. I advised destroying, but the owner was away and the foreman was unwilling to act. I got the horse up at 8 A.M., with the aid of slings, and kept him there till 2 P. M. At 8 P. M. put him in the slings again and gave directions to keep him there as long as possible. He was let down at 12 P. M. I gave him two hypodermic injections of 6 grains each of morphine, and three doses of camphor and opium through the day and night. Applied hot poultices every three hours.

May 16th.—Temperature, 104; pulse very weak. I tried to put the horse in the slings, but was unsuccessful. The owner returned and was willing to destroy him. He was shot at 9 A. M.

Through the whole course of the case I injected the wound once a day with three per cent. solution carbolic acid, and the soft parts were washed with the same when the poultices were changed.

Post-mortem showed a patch of necrosis on the navicular bone the size of an old-fashioned three-cent piece.

*Case No. 2.*—On May 19th, 1889, I was called to a brown gelding weighing about 950 pounds, used in a delivery wagon. The day before the horse had picked up a nail in the off hind foot, by the side of the frog, and about an inch and a half from its apex. When the driver removed it, which he did with much difficulty, he said that no blood flowed, but that some liquid came out that looked like thin syrup.

The horse was taken home, the shoe removed and a flax-seed meal poultice applied. The next morning he did not eat his breakfast and would not touch his foot to the floor, so I was called. I found the horse with a temperature of 101°, pulse 60, respiration 20. A clear synovia was dripping from the wound. From my experience with the former case I decided that I could make the matter no worse by probing to

the bottom of the wound, which I did, much against the horse's will. I was gratified to find nothing hard. On removing the probe a gush of synovia followed. I thinned the horn around the wound, injected it with a 1 to 500 solution of corrosive sublimate, and placed him in an astringent tub of zinc sulphate through the day, and a poultice of bran wet with white lotion at night; gave two small doses of opium and camphor. This treatment was continued for four days, when, as he was resting his toe, the sedative was discontinued. On the third day the temperature was 102 2-5, but fell gradually from that. Very little suppuration occurred till the third day. In six days he began to lie down when released from the tub, and stay the greater part of the night, always lying on the sound side, and getting up without any trouble.

On the 30th of May (11th day) the discharge of synovia had ceased, but there was still considerable suppuration. The wound was now poulticed with flaxseed meal during the day, and shorts wet with white lotion at night for five days, when a high-heeled shoe was applied, the wound injected with a three per cent. solution of carbolic acid once a day and dressed with oil of cade on a pledget of oakum, kept in place by a thin strip of pliable wood. On June 15th, a little less than a month from the time of the accident, the horse still remained quite lame, but as the wound was entirely healed he was shod with a leather and turned out to pasture, where he remained for six weeks and was then put to work, and only a slight hitch was noticed in his gait when starting.

*Case No. 3.*—A large roan mare, weighing about 1,400 pounds, was admitted to the hospital Dec. 15, 1889, with the history of having picked up a nail, four days previous, in the near fore foot.

The wound was dressed with tar and oakum and shod with a leather. The mare worked for two days slightly lame and then grew much worse. As there was some snow and ice in the streets the owner decided that she must have slipped and strained her shoulder, and applied linaments to that part for two days; but as she was constantly getting worse he sent her to the hospital.



The mare was very lame, barely touching the foot to the ground in progression. On removing the shoe and looking for a nail hole I could see none, but found the outside heel very sore, and so began removing the horn from that locality. After removing considerable I found a very small hole between the bar and sole at the posterior part of the middle third of the foot. The horn had been separated from the sensitive sole by suppuration as far forward as the quarter, so I removed all of that, a part of the frog, and as much of the bar as possible. The bar was extremely sensitive to the touch. The nail had apparently gone obliquely through it in a backward direction. After cutting away as much as possible, my probe could only go in about three-quarters of an inch, and that with difficulty, owing to the smallness of the hole.

As this case remained in the hospital nearly two months, it would be tedious for you to hear the daily record; so I will only give a general outline of it.

The mare was extremely lame from the beginning. In four days synovia began to appear in small quantities, when she was put in the zinc sulphate bath day times, and flaxseed meal poultices at night. Suppuration was extensive; all of the horny frog had to be removed and the sole, as far forward as the toe on the outside. This surface horned over rapidly, and on December 26th a high heeled shoe was put on and the wound, which was now discharging mostly synovia, was injected twice daily with three per cent. carbolic and with white lotion, and a dressing of oakum soaked in white lotion applied.

After twelve days of this treatment the foot got too hard; so the shoe was removed and the foot poulticed for a few days, when the shoe was again put on and white lotion treatment resumed. From January 23d to February 1st there was very little pus discharged and less synovia; but the general symptoms were worse. She would not eat, and was losing flesh very fast. Her temperature had gradually been rising, till February 1st, when it was  $103^{\circ}$ . On this day, after injecting the wound, a flow of pus and synovia (largely pus) occurred, amounting to over an ounce. The next day the

temperature dropped to 101.3°, and she rested the foot on the floor better than she had done since she was admitted. Improvement was steady from this time till she was discharged on February 18th. We alternated keeping her in a sling and in a box stall on peat moss. In the box stall she would lie down, usually on her lame side, and would have to be turned over before she could rise. Opium and other sedatives were given as thought best. She was fat when she came in, but on February 1st was a mere skeleton; but after that she began to gain flesh quite rapidly.

*Case No. 4.*—A black gelding, weighing about 1,300 pounds, was admitted to the hospital November 3d, 1888, with a nail wound of the near hind foot, half an inch from the point of the frog.

He was treated much the same way as the case just recited. He also lost considerable flesh, and for about a week could not rise from either side without the aid of slings. The discharge of synovia began rather abundantly, and gradually dwindled down till December 16th, when it was entirely stopped. The horse was discharged December 24th, walking fairly well; was rested in his owner's stable for about a month, when he walked sound and was put to work.

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## THE PRODUCTION OF IMMUNITY

WITH THE CHEMICAL SUBSTANCES FORMED DURING THE GROWTH OF THE BACILLUS OF HOG CHOLERA.

BY E. A. V. SCHWEINITZ, PH.D.,

Chemical Laboratory, Bureau of Animal Industry, Department of Agriculture,  
Washington, D. C.

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As a continuation of the preliminary paper on the ptomaines from the hog cholera germ, presented by us to the Chemical Section of the American Association for the Advancement of Science, in August, and published in the *Medical News*, September 6, 1890, we present now a somewhat detailed account of the successful experiments in the production of immunity in guinea-pigs which have been made up to date. The work from this standpoint again is, of course,

a practical continuation of the experiments of Drs. Salmon and Smith made upon pigeons in 1877, in which sterilized culture-media were used for preventive inoculation. We refer further to the bulletin of the Bureau on "Hog Cholera," published in 1889, in which are recorded a number of experiments upon hogs, sterilized culture-media being used for the purpose of producing immunity.

This work of Drs. Salmon and Smith was the pioneer work in preventive inoculation with other than some form of the germ of the disease itself, and the work now recorded was, of course, under the advice and direction of Dr. Salmon as head of the Bureau of Animal Industry. Without the careful bacteriological study of hog cholera which has been made by the Bureau of Animal Industry, our work would have been impossible. For our laboratory experiments guinea-pigs were used, as being convenient to handle and susceptible to hog cholera. They have proved very satisfactory. The material used for inoculation was prepared in the chemical laboratory by modifications of methods already described, and by other methods which will be explained in more detail at some future date. The testing of the materials used, to determine that they were free from germs, and the greater part of the preventive inoculations, were made by Dr. Moore, with such quantities of substance and at such times as we thought best. The autopsies were also made by Dr. Moore, and the work thereby greatly facilitated.

As to the name which should be given to the ptomaines and albumins from the hog cholera culture-liquids, until their chemical constitution is more thoroughly studied, it would seem best, as there are several distinct swine diseases, to call the ptomaines from the hog cholera germs, as a class, *Sucholotoxins*, and the ptomaine, which appears to be the principal factor, *Sucholotoxin* (*Su*—a hog, *cholo*—cholera, and *toxus*—poison). *Sucholo-albumin* would seem to be sufficiently distinctive for the albumin of these culture-liquids. As Hankin\* shows, the name *toxalbumin* is hardly the correct one to ap-

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\* *British Medical Journal*, 1889, p. 810.

ply to these substances. We shall, therefore, refer to the ptomaines and albumin by the names given above.

The first of our experiments that we will record were made with sucholotoxin.

EXPERIMENT I.—Two guinea-pigs, each weighing about three-fourths of a pound, were treated with a solution of about 0.05 gramme of sucholotoxin each. The solution was introduced under the skin of the inner side of the left thigh. Immediately after the operation the animal appeared uncomfortable, but was not made ill. For a few days there was a rise in temperature, and also a slight swelling at the point of inoculation, which, however, disappeared in about five days, and the animal was then well.

Two more guinea-pigs were now selected as checks, approximately of the same size and weight as those which had been treated, and the four animals were then inoculated with 0.1 c. c. of hog cholera virus each (0.1 c. c. beef-infusion and peptone culture one day old, plus 0.2 of sterile, normal salt solution). This is the dose which previous experiments made in the Bureau had shown to be the proper quantity to kill a guinea pig in from eight to ten days. The inoculations with the virus were also made subcutaneously in the thigh. The checks died in eight and nine days. Post-mortem examination showed a large swelling at the point of inoculation, infiltration of a purulent, grayish substance into the connective tissue, and necrosis of the superficial layer of the muscles of the thigh; enlargement and reddening of inguinal glands; Peyer's patches enlarged and pigmented; liver pale, and covered with a number of necrotic foci; spleen very much enlarged, dark-colored, and friable. Cover-glass preparations from the spleen and liver showed hog cholera germs. This was the characteristic appearance of all the check guinea-pigs upon post-mortem examination, and it will not be necessary to repeat these details.

Of the animals which had been first treated with the substance mentioned, and afterward inoculated, one died two days after the last check. Autopsy revealed the following: At the point of inoculation in the left thigh the subcutaneous

tissue was infiltrated with a greyish-white substance, and the superficial layer of muscles over the inner side of thigh, and 4 square centimeters of the abdominal wall were necrosed. liver pale; spleen much enlarged, dark-colored, and friable. Cover-glass preparations from the spleen showed a large number of hog cholera germs. Both ventricular walls of the heart were light-greyish and very brittle (necrosed). The other guinea-pig of this set was quite ill for ten days, with a large swelling at the point of inoculation. This finally opened and healed, and the animal was quite well within three weeks after the inoculation, and has continued so to date—five months.

EXPERIMENT II.—The next series of experiments were made with sucholo-albumin from beef-infusion and peptone culture-media.

Two guinea-pigs were again selected and treated with about 0.008 gramme each of sucholo-albumin. There was a slight rise of temperature in the animals and the formation of a small, hard lump at the point of injection. This disappeared by the eighth day, and the animals were quite well. Two more guinea-pigs were now taken as checks, and all four animals were inoculated with 0.10 c. c. of hog cholera culture. The checks died within seven days. The post-mortem appearances were practically the same as those noted in the first series. The two guinea-pigs which had been treated with the sucholo-albumin died *ten* days after the checks. This indicates considerable resistance to the disease. Autopsy showed, at the point of injection with the albumin, the subcutaneous tissue thick and reddened. The animals were considerably emaciated. At the point of inoculation a cyst the size of a walnut, and composed of a grayish, purulent substance, was also found. The muscular wall surrounding this was sprinkled with punctiform hæmorrhages. Peyer's patches swollen and pigmented; mucous membrane of small intestine covered with a dry, yellowish, firm layer of mucus; stomach contained a considerable quantity of liquid; liver pale, and showed fatty degeneration; spleen slightly enlarged and dark. Cover-glass preparations showed no germs, but a culture

made from the spleen showed hog cholera germs. Beneath the peritoneum in the region of the spinal column, and in the mesentery was a considerable number of small grayish tubercles. Several other experiments were made by treating guinea-pigs with the albumin in varying quantities, all showing resistance, and subsequently immunity.

EXPERIMENT III.—Three guinea-pigs were treated with sucholo-albumin, 0.1 gramme being given to each, subcutaneously in the thigh. The albumin for two of the animals was derived from cultures containing blood-serum; the albumose given to the third was from ordinary beef-infusion peptone culture. Ugly ulcers formed at the point of inoculation, which healed, however, in from ten to fourteen days, and the animals, with the exception of a slight rise of temperature, were well.

Two checks were again selected, and the five animals were inoculated with 0.1 c. c. hog cholera virus. The checks died respectively in eight and ten days from hog cholera. The animals which had received the preventive treatment were slightly ill for a few days with swelling at the point of inoculation, which finally opened and then healed nicely, and within a week the guinea-pigs were well.

Three weeks after the inoculation one of these animals was chloroformed and examined post-mortem. Not the slightest scar could be discovered, all the organs appeared perfectly normal, and no germs were found.

EXPERIMENT IV.—Four guinea-pigs were treated, two with a mixture of sucholotoxins, two with sucholotoxin and albumin. The injections were made as before, subcutaneously in the thighs, and at intervals extending over a period of four weeks. The sore caused by each injection was allowed to heal before the next one was made. After the animals had recovered from the last treatment two checks were selected, and the six were each inoculated with  $\frac{1}{10}$  c. c. hog cholera virus. The checks died, one in eight and the other in ten days, the post-mortem examination showing characteristic hog cholera lesions. The animals having the preventive treatment were ill for about four days, those that received

only the sucholotoxins being more dull than the others. There was also slight swelling at the point of inoculation with the germ, which subsided in ten days, after which the animals were perfectly well, and have remained so—four months.

EXPERIMENT V.—Six guinea pigs were inoculated for this experiment, two with solution of the sucholotoxin and four with a solution of the mixed sucholotoxins. The sucholotoxin solution produced only slight local lesions, while the mixed toxins caused ulceration at the point of injection which did not heal for two weeks. The treatment in this case again extended over a period of from three to four weeks. The animals having by this time recovered, the test-experiment with hog-cholera virus was tried. Four of the animals mentioned above were taken—two from each set—and also two checks, and the six were inoculated. The checks died in eight and nine days, the autopsy showing the characteristic conditions of death from hog-cholera. Those that had the preventive treatment were ill and dull for from four to six days after the inoculation. At the point of inoculation there was also some swelling and infiltration, very slight, however, compared with the similar swelling on the checks. In the treated animals the swelling sloughed and healed, and within ten days after the inoculation they were perfectly well. To test the resistance of the animals that had been treated by this method, to ordinary exposure, the following experiments were conducted.

EXPERIMENT VI.—Two guinea-pegs that had received the preventive treatment, two blanks—*i. e.*, animals that had received no treatment—and two check animals that were inoculated with hog-cholera virus, were placed in one large cage. The checks became ill and died in eight or nine days from hog-cholera. During this time the cage was cleaned only three times, so as to give full and free opportunity for contagion. One week after the checks had died one of the blanks became ill and died within ten days. The autopsy showed hog-cholera lesions. The second blank became ill a few days after the first blank succumbed, and died within thirty days. The animals

which had the preventive treatment are now and have been quite well, though continually exposed for five weeks to every opportunity for contagion.

EXPERIMENT VII.—This experiment is a step in advance of those already recorded, and although not quite so conclusive, indicate that the proper methods have been adopted.

A pure chemical compound prepared synthetically in the laboratory, was used for treating the guinea-pigs. Three animals were taken, and this compound was administered to them by the method already used. There was a slight rise in temperature of the animals and swelling and soreness at the point of injection. After this had healed, these animals and two checks were inoculated with  $\frac{1}{10}$  c. c. of hog-cholera culture. The checks died in eight and nine days. The animals which had been previously treated became ill, two dying five and six days after the checks. The third entirely recovered.

Post-mortem examination of the two that died showed the following: At the point of inoculation the skin had sloughed away over an area of 1 sq. cm. The superficial muscular layer was necrosed over an area of about 3 sq. cm. and to a depth of 1 mm., lymphatics in the fold of the knee much enlarged; Peyer's patches enlarged and pigmented; spleen *very slightly enlarged and not discolored*; kidenys reddened; lungs normal. Cover-glass preparation from the spleen showed a few hog-cholera germs. On both sides of the spinal column were several grayish tubercles, from  $\frac{1}{4}$  to 2 mm. in diameter, lying just beneath the peritoneum. This material is being more fully tested, and experiments which promise to be successful are also being made upon hogs. Autopsies made from the animals of experiment VI, three or four weeks after their recovery, showed that the parts were perfectly normal, not even a scar being left upon the skin, and the immunity produced was therefore *perfect*.

It is important to add that in all the experiments great care was taken that the solutions used were free from germs, cultures always being made. In cases in which the albumin is used this is particularly important. A single precipitation



with absolute alcohol does not suffice to destroy the germs, and it is necessary to free the solution from germs by means of a Pasteur filter, or in some other suitable way. Therefore experiments made with material which has not been tested for germs are practically of no value. As to the poisonous character of the ptomaines, a single large dose is sufficient to kill a guinea-pig in from one hour to two days. The autopsy of a case of this kind is as follows: Liver, pale and fatty; subcutaneous tissue over abdomen, necrosed and infiltrated; muscle soft and friable. Other organs apparently normal.

The experiments here recorded show :

1. That in guinea-pigs *complete immunity* from hog-cholera can be produced by *chemical inoculation*.

2. The suchlotoxins and sucholo-albumin are equally effective in this respect, and a mixture of these two products gives greater immunity than either used by itself. The effect of the albumin in producing immunity from anthrax has already been pointed out by Hankin, his experiments being very successful.

3. The sucholotoxins given in large doses produce death. To produce immunity they should be administered in small quantities at a time and at frequent intervals, the system being in this way accustomed to the poison and enabled to resist it.

Further study in this interesting line of work is in progress.

The tabulated results of the foregoing experiments are appended:

TABULATED RESULTS OF EXPERIMENTS IN PRODUCING IMMUNITY FROM HOG-CHOLERA IN GUINEA-PIGS.

Number of experiment.	Material used for treatment.	Hog cholera virus used for each animal.	Number of animals used.	Number of checks.	Number of days between inoculation with virus and death of checks.	Result in treated animals.
I.	Sucholotoxin - - -	0.10 c. c.	2	2	8 and 9	1 died in 11 days; 1 recovered.
II.	Sucholo-albumin - - -	do.	2	2	7	Died in 17 days; great resistance.
III.	Sucholo-albumin - - -	do.	3	2	8 and 10	Recovered; immunity.
IV.	1. Sucholotoxins - - - 2. Sucholotoxin and albumin	do. do.	2 2	2	8 and 10	Recovered; immunity.
V.	1. Sucholotoxin - - - 2. Sucholotoxins - - -	do. do.	2 2	2 blanks 2 checks	8 and 9 8 and 9	Recovered; immunity. Blanks died in 18 and 30 days.
VI.	Sucholotoxins - - -	do.	2	2	8 and 9	Others not affected; immunity.
VII.	Pure chemical - - -	do.	3	2	8 and 9 8 and 9	Two died in 13 and 14 days. Third recovered; immunity.

## A PRACTICAL PAPER ON THE CASTRATION OF THE BITCH

BY T. B. ROGERS, D.V.S.

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Nothing so enhances the reputation of the veterinarian as does skill in operative procedures, nothing damns him so quickly as ill success in his operations. The writer believes that comparatively few veterinarians spay bitches unless they are driven to it, and begs to offer the result of ten years' experience in the operation to the younger members of his profession. The proper age is any time after the sixth month; before this time even the educated finger fails to recognize the uterus; and the operator who cannot by sense of touch find what he wants has still something to learn.

What is the best position to secure the animal in for the operation? My method is to tie the mouth and fore-legs, to have two assistants (or, if the dog is large, three), and to operate with the animal lying on the back. The assistant holding the hind legs stretches them gently backward and well apart, so as to render the abdominal muscles tense. If the dog is large, a third assistant makes pressure on the thorax, while the one in front holds the head and front legs. Mr. Cole, of Millville, N. J., who spays a good many bitches, hangs them up by the hind-legs, the legs being stretched apart by a small "gambrel," like a slaughtered pig hung up to cool. The advantages of this method are several: the intestines gravitate downward out of the way, the danger of death from cerebral anæmia is lessened, and if the dog is small the operation can be performed without assistance by passing a strap through the tied front legs and putting the operator's foot in it. The disadvantages are the difficulty in separating the divided recti muscles, owing to the animal's weight stretching them, and the liability to injury of back or legs through excessive stretching during the operation. I have tried it, and don't like it. Other operators have a trough in which the animal is strapped; this method is open to the objection that it cannot be carried round in a scattered country practice.

The instruments needed are a convex bistoury, or prefer-

ably a "Miles-hook," an "S" sound, straight and curved needles, and silk.

The dog should be washed with carbolic soap the day before the operation, and, if woolly, should have the region of the operation shaved; but if this is done great care must be used to remove all the cut hair or it will get in the wound and cause trouble. It is advantageous also to limit the diet to milk and water for a day prior to the operation. Antiseptic precautions should be used throughout. The incision should be on the median line, should commence a little nearer the ensiform cartilage than the pubes, and should be carried backward for an inch and a half and *no more*. *The longer the incision the greater the mortality*. I prefer to cut the skin first, and then go carefully between the recti muscles without injuring their fibres, and the peritoneum should be divided with the muscles, if care be taken to commence near enough to the ensiform cartilage. The muscles will be found thinner than below, and the peritoneum in closer apposition to them; the danger of incising a full bladder will also be lessened. The incision made, the operator standing on the left side of the bench passes the index finger of the left hand into the wound, the dorsal surface of the finger looking toward the head of the animal, and moving it backward and somewhat toward him, he should find the right horn of the uterus. If difficulty occurs (and it will occur occasionally), the "S" sound should be greased and carefully passed through the vagina into the uterus and the end of the sound felt for. Having brought out the horn it should be gently held by the thumb and forefinger of the left hand, being kept slightly tense, and the index finger of the right hand being passed along the horn, will find the ovary suspended in a fold of broad ligament; a little pressure of the finger loosens it, and allows the horn and ovary to be brought outside the abdominal cavity. The same procedure is followed with the other horn, and a ligature being passed round both horns about an inch from their distal end, the ovaries and portions of horn are removed, the stump sponged off, and with its ligature returned to its place. The ligature becomes encysted or absorbed. The assistant

at the hind-legs elevates them, allowing the intestines to gravitate away from the incision, and any protruding omentum is sponged off and returned. To close the wound, the operator stands on the opposite side to that which he occupied before, and placing the index finger of the left hand in the wound between the viscera and peritoneum, passes the first half of the stitch from without to within, taking a good hold, and not removing the finger until the needle touches it. The needle is now drawn through and out of the cavity, and the index finger of the left hand passed into the cavity, the peritoneum on the opposite side is drawn up until its edge approximates the cut in the muscles and the needle passed close to the finger from within to without. The ligature is now pulled upward, the finger being still retained in the cavity to ensure that nothing is included in the wound, and is tied, sliding the finger out as the final tension is applied. This stitch is passed midway of the incision, and one is now passed through the skin only on each side of it.

The dog is now lifted gently down and liberated. The stitches are removed on the fourth day, and no solid food allowed until after their removal. What are the accidents incidental to the operation? The most annoying one is to break off the tender horn in a young patient through some sudden struggle and be unable to find the immature ovary without enlarging the wound. This accident happens less frequently as the practitioner becomes more experienced, and is followed by "heat," though, of course, the bitch cannot become pregnant. I have seen one death from shock in an old fatty-textured bitch. Occasionally a death occurs from peritonitis, but this is rare. Delay in removing stitches may lead to the formation of a troublesome fistula; this is best treated by freshening the edges of the canal with a needle. Sometimes, about a year after the operation, through attachment of a coil of intestine to the uterine stump, the lumen of the gut becomes wholly or partially occluded, and the animal pines, and dies. I have seen two such. On one occasion I cut into a full bladder, mistaking it for the peritoneum. The wound was closed by interrupted suture, the abdominal cav-

ity well sponged out, and the bitch made a good recovery. I have never incised intestine, but some years ago was so unfortunate as to include a loop of intestine in the wound. If pregnancy is found, and is not far advanced, the ovaries may be removed by torsion or scraping, and the horns left intact. If far advanced, I think it is better to close the wound without attempting their removal.

It is hardly necessary to add that the operation should not be performed during lactation, or during the course of, or recovery from, an attack of sickness.

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### BOTTOM DISEASE.\*

By D. B. McCAPES, V.S., Vermillion, South Dakota.

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The above name is given to a disease which was first noticed upon the Missouri bottoms, and at that time it was supposed to exist there only. This latter supposition is erroneous, the disease appearing in all its stages upon the uplands as well. Yet, in support of the theory which formerly existed, it is still noticed that the majority of the cases are met with upon the bottom lands. The grass, both on the uplands and bottoms, is very rich and is highly prized by feeders. If anything that upon the bottom land is regarded as the superior article.

The disease dates back several years. The writer has had personal experience with it for eight years. The first knowledge he had of it was when it appeared upon his father's farm, which is on the high land, in the spring of 1881, and before fall had killed fourteen out of twenty-two head. It is not often that the disease affects such a large number, and for two or three years after that it was not so extensive, a lone case coming up occasionally, but it was always fatal.

It apparently is not a contagious disease, as it is often noticed that out of one man's ten or fifteen head one or two only take the disease and die, while all the rest remain perfectly healthy. This in brief is a history of bottom disease.

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\*A paper presented at the meeting of the United States Veterinary Medical Association in Chicago.

*Etiology.*—A few veterinarians have stated that the disease is caused by eating *crotalaria sagettalis*, but this seems hardly possible, as the writer has repeatedly seen the disease occur among animals which had no access whatever to that plant. The disease seems to show no preference in selecting its victims; horses that have either well or poorly ventilated stables, horses that have poor feed and those that are well-fed, the old crow-bait and the family pet, all alike are seized and follow the same downward path to death. If it is any more prevalent in any one season, that one is fall, about the time grasses are dying, but it is seen at all times of the year.

*Symptoms.*—The symptoms in general resemble those of cerebro-spinal meningitis. The writer will give them as well as he can. About the first sign of sickness will be the loss of energy, the animal appearing dull and languid, apparently going to sleep while eating; will wake suddenly, eat for a time and gradually fall into somnolence again. If turned out into the pasture, as a general thing they walk continually with a staggering and rather go-as-you-please gait. The action of their hind limbs is peculiar, stepping long and knuckling over in the last stages. Membrane nictitans is slightly injected in first stages, increasing as the disease progresses; buccal membrane generally dry and hot; membrane of vagina pale; temperature lower than normal, by one, two or three degrees. At times they become crazy and crowd against the manger, bruising and knocking the skin from their head, which becomes swollen; they have a great desire to rub their nose, as if trying to remove some very troublesome irritant; and lastly, violent stamping of the hind feet, first one and then the other. These last symptoms are not always present. Fæces are hard and very small; diarrhœa very seldom accompanies the disease, but when present the animal soon succumbs. The duration of the disease is from two weeks to two months.

The following is a description of a case which occurred last February. On the sixth of the month the animal was dull and drowsy; loss of appetite had been noticed for several days; mucous membranes were dull and of a yellowish

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tinge; slight stamping of hind feet and wandering about the stall; pulse, 45; temperature, 97°.

February 8th, the animal was about the same with better appetite; pulse, 45; temperature, 95°; animal more quiet and drowsy: fæces small, hard and scanty.

From February 6th to 8th, the foll-ball compound of fifteen grains quinine and one grain strychnine were given three times daily.

From February 8th to 10th the following dose was given three times daily: Strychnine, grains, lss; alcohol, 1 oz.; carbonate ammonia, 11 drachms; fluid canadensis, 11 drachms.

February 11th the horse was very uneasy, wandering around the stall, staggering, falling and rising again, rubbing nose on manger and walls of barn; head swollen; respiration difficult; temperature, 99°; could not take pulse. The horse was destroyed; post mortem lesions were very slight so far as I was able to determine, with the exception of the viscera, which were very pale.

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## THE SCREW-WORM.

By M. FRANCIS, D.V.M., Texas Agricultural Experiment Station.

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In the first annual report of this station I published some notes on the screw-worm, giving only such facts as I had witnessed, and remedies that I had employed. After two years of study and observation, during the summer months of which I have seen cases of the parasite almost daily, it is thought advisable to give a more exhaustive report of the life history of the insect.

The screw-worm is the larva or maggot of a dipterous insect (*Lucilia macellaria*) that is very common in this portion of the country during the summer, and is parasitic on man and animals.

The mature insect ("Imago") is a fly, a trifle larger than our ordinary house fly, with a yellow head and three dark longitudinal lines on the thorax. The abdomen is yellowish green. The fly lays its eggs in wound sores, and even in the natural openings of man and animals.



In "Animal Parasites and Messmates," by Van Benenden, page 119, there appears the following: "There is another fly in Mexico which is dangerous to man; it is known by the name of *Musca hominivora*, or more correctly, *Lucilia hominivora*. Vercammer, a military surgeon of the Belgian army, relates that a soldier in Mexico had his glottis destroyed, and the sides of the roof of his mouth rendered ragged and torn, as if a cutting-punch had been driven into those organs. This soldier threw up with his spittle more than two hundred larvæ of this fly."

Prof. James Law, of Cornell University, in a letter to the writer, said: "Under the name of *Lucilia hominivora* it is said to be very destructive to the French convicts at Cayenne, the fly depositing its eggs in the mouth and nostrils during sleep."

No cases in man have fallen under the personal observation of the writer.

The fly seems to be well distributed over the American Continent, for Dr. Williston, of Yale College, writes that "it occurs everywhere from Canada to Patagonia." Although so generally distributed, only in Texas does it bear an economic importance in the United States. Of all our domesticated animals cattle suffer the most from its ravages. They occur in wounds from horns, castrating, spaying, branding, dehorning, barbed wire injuries, and often where ticks have burst on the brisket, flank, or just behind the udder of cows. They often occur in the vulvæ of fresh cows, especially if there has been a retention of the placenta or afterbirth. Young calves are almost invariably affected in the navel and often in the mouth, causing the teeth to fall out. One case occurred in the first stomach (paunch or rumen) that is worthy of mention: Last September the writer had occasion to kill a Jersey bull calf, probably two months old, that had screw-worms in both hind legs just above the hock joint. On opening the abdomen I found hair-balls in the stomach (rumen), and, to my surprise, about twenty-five fully matured screw-worms almost buried in the wall of that organ. I placed some of the worms in moist earth, and in ten to twelve days they hatched out genuine screw-worm flies. How did they come there?

My opinion is that the calf licked the sores on his legs, and in doing so took in some eggs that hatched and developed in the stomach.

Horses and mules are not so often attacked. In them they are usually found in barbed wire injuries, and occasionally in the sheaths of horses, the vaginæ of mares, and the navels of colts.

Hogs are more liable to become affected than horses. They are frequently wounded by dogs and by fighting, or there may be barbed wire injuries, wounds from castration, etc.

Sheep are comparatively free from attacks unless injured by dogs.

In all animals alike, the eggs, after being laid by the fly, hatch into larvæ or so-called "worms." The exact length of time this requires seems to vary with circumstances. My present opinion is that, if the eggs are laid in a moist place and on a warm day, it requires less than one hour; whereas, if laid in a dry place they seem to dry up and lose their vitality. The young larvæ when first hatched are small and easily overlooked. If they are hatched on the surface in a drop of blood from a ruptured tick, for instance, they attempt to perforate the skin, and if hatched in wounds they at once become buried out of sight. They seem to attach themselves by their heads, and burrow their way under the skin, completely devouring the soft flesh. Occasionally a few are seen moving from one place to another, but usually they remain fixed at one point. The worms grow steadily in size, and the hole in the flesh becomes larger every day. Sometimes the worms make tunnels, but not to any depth; they usually stay on the surface. They evidently produce considerable irritation, for the part is always swollen and constantly bleeding. This swollen, gaping appearance of the wounds, together with the constant discharge of blood, are characteristic of the presence of worms. It seems to require about a week for the worms to become fully grown. At that time they are about five-eighths to six-eighths of an inch long. They then leave the sore and go into the ground, where they pass their pupa state and hatch out as flies in from nine to twelve days. Of several

hundred hatched out by the writer, the shortest time was nine days and the longest fourteen days, but in the majority of cases it required from nine to twelve days. While the larvæ are thus developing the flies are constantly laying fresh eggs in the wounds, so that the young worms take the places of the matured ones, and thus keep up a constant and progressive loss of tissue. If the worms are not killed they eat constantly deeper, and often kill the animal. Sometimes the abdomen is opened and the bowels escape—as is especially liable in case of heifers spayed through the abdomen. At other times a tail is eaten off, or extensive caverns are made into the muscles.

The treatment usually employed in these cases consists simply of killing the larvæ with cresylic ointment, calomel, chloroform, or carbolic acid. The selection of the most suitable remedy will vary somewhat with the location, character and extent of the sores. In some cases bandages are useful. In others the sores can be filled with oakum and a few stitches taken. All treatment should be supplemented by daubing the margins of the wound with pine tar to ward off the fly. A vast number of cases can be prevented by keeping cattle free from common cattle ticks.

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## THE TREATMENT OF ECZEMA IN DOGS.

Translated from an article by Dr. Muller in *Der Thierarzt*, by F. W. TURNER, D.V.S., New York City.

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In the acute stages of eczema—especially in eczema vesiculosum, pustulosum and madidans—far better results are obtained by simple treatment with dressing powder, consisting of zinc oxide, starch, talcum, boracic or salicylic acid, than from the so-much-vaunted preparations of tar and corrosive sublimate. Even frequent washing with soap often does harm in acute cases. When the eruptions occur on such parts of the body where powder will not adhere, a mild ointment, consisting of zinc oxide, boracic or salicylic acid with a little water and lanoline, will often prove very beneficial. In chronic cases the treatment will naturally vary according to the stage of the disease, since it may be either scaly or moist. In moist

chronic eczema, so often occurring in dogs, the treatment with an ointment of red oxide of mercury, or ammoniated mercury, solution of corrosive sublimate 1-200, or the painting of the eczematous spot with a strong solution of caustic soda or potash, is indicated; also frequent washing with soap and water is of service. When tar is applied to moist spots, or as long as any moisture shows itself, it seems to aggravate the sore and do more harm than good. A new remedy, lately introduced in medicine, of great value in the treatment of moist chronic eczema, is soziodol of mercury. When an ointment of 2 per cent, of soziodol of mercury with lanoline is applied several times a day to the affected parts, the moist surfaces soon become dry, the swelling is rapidly reduced, the epidermis regenerated, the skin becomes normal, and only the loss of hair shows where the disease had existed. Observations show that dogs would vomit freely if they had a chance to lick off the ointment, and gave occasion to study means of preventing such an accident with the following results:

Soziodol of mercury is a very fine, orange-yellow powder, containing 31.2 per cent. of mercury and 38 per cent. iodine, almost insoluble in water, but readily soluble in water by the addition of a little chloride of sodium or kitchen salt. When applied in the pure state to wounds or mucous membranes, it acts as a strong irritant. When diluted about twenty times, it is still very irritating, but on diluting it fifty times it seems to irritate no longer. It seems advisable, when using a soziodol of mercury ointment to prevent the animal from licking off the ointment by a proper muzzle.

In cases where we have a dry chronic eczema, no matter whether it was dry from the beginning or developed from a case of moist eczema, then the different tar preparations, such as *pix liquidá*, *ichthyol* and *thiol* are the proper remedies. Investigations have shown that the terrible itch in eczema is much more speedily relieved by the application of *thiol* or *ichthyol*, than by tar, a fact for which no satisfactory explanation can be given as yet. In all cases where much itching exists, *thiol* or *ichthyol* is preferable to tar, for the constant rubbing and scratching of the dog generally causes an acute degeneration of the affected parts.

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## REPORTS OF CASES.

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### AN EPIZOOTIC APHTHOUS FEVER.

By DR. P. PAQUIN, Columbia, Mo.

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There has existed in the State of Missouri (and I am told in Iowa and Illinois to some extent) a fever which has attacked during the same period so many cattle very widely scattered, that I am at a loss to account for the active cause. No less than three thousand two hundred and sixty-six cases have been reported to this office, and I have seen besides upwards of two hundred and ten cases in a couple of counties. Dr. C. B. Michener, of New York, saw a few cases with me near Columbia and elsewhere in Missouri.

The malady is, in its course, history and lesions, new to me. It seems to have sprung up all at once in several counties of our State, seven of them having reported within two or three days a large number of outbreaks among their herds.

There was no regular course of progress in any locality. In some herds only one or two heads suffered, whilst in others the vast majority and sometimes all became ill. In some townships it stopped at one farm, and in others it visited a great many.

The death rate in adults was not over one-half of one per cent., and these deaths were due to complications or starvation. In suckling calves the disease was not so prevalent even in the affected herds, but among them actually diseased, the death rate was in average twenty per cent. in those too young to be specially fed. A great deal of damage was caused, however, by the rapid loss of flesh and milk due to inability to eat and ruminate. In a very few days fat cattle fell in flesh to the amount of six to ten dollars.

There was some resemblance in the duration and general lesions with the European foot and mouth disease, but the peculiar, specific and characteristic blebs of the latter were not present. The nature and limitation of the blisters and ulcers differed, and again inoculation practiced repeatedly

with matter from affected mouths failed to produce anything in cattle, sheep and goat. The disease I am about to describe hurriedly does not seem contagious, but some unknown influence acting broadly produced it.

The symptoms are as follows: The cattle appear gaunt and gaunter day after day for want of food. They are more or less stiff in locomotion. If examined the nose may be found hot, dry, cracked and sometimes wine colored in patches. The pad and the lips present at an early date blisters which soon form a thick, yellowish, cracked, soft crust. Sometimes the tongue is blotched or blistered, but rarely. There is much drooling of stringy, watery matter from the mouth, and the odor is sometimes anything but agreeable, often very fetid indeed. Those yellowish crusts slough out after a few days and leave raw surfaces or ulcers. There is *rarely* a kind of smacking of the lips. The blisters are mostly large cracked patches across the pad, as though the parts had been scalded. They are not circumscribed blebs.

In a few cases complications arise by which gangrene of the gums extends to the jaw bones or teeth, and in exceedingly few instances some teeth become loose and even drop off.

In most of cases, lameness and stiffness becomes severe, as in laminitis. In very rare exceptions lesions appeared above the hoof in the cleft. Occasionally also, blisters and consequent results (crusts and even ulcers) occur on the udder. In nine or ten cases these appeared on the neck, the abdomen, the back and about the tail. Uncommonly there is diarrhœa. The malady runs its regular course in about eight days. The shortest course I have noticed was five and the longest eleven days. There are irregular or complicated cases which last much longer. Fever averages 103° F. The type is very mild.

As treatment astringent washes of the ulcers, laxative drugs and administration of food was very successful in shortening the course and preventing too much loss of flesh. Boracic acid and alum solutions were often used with benefit. Prehension of food usually being impossible, most cattle were fed quite beneficially with ears of corn and other solid

food pushed into the mouth between the sets of molar teeth. I would be pleased to hear from some experienced veterinarian on the subject. I have been too busy to study the pathology of the affection, nor have I time to search for its cause.

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### ACUTE TUBERCULAR MENINGITIS.

By T. P. TURNER, D.V.M., Westchester, Pa.

A case of this rather rare disease in veterinary practice came under my observation quite recently.

At a late hour on the evening of September 13th I was called to see a cow that had been acting very strangely for five or six days, showing symptoms of some cerebral irritation, such as wandering away from the herd and running against trees, fences, etc. Probably the prodromic stage of this case had extended over a period of two or three weeks, since the attendants were rather careless and had noticed no decided symptoms until the cow was in a delirious condition.

For a period of three months she had coughed at intervals, and on my first visit coughed several times; the latter being the characteristic cough of tuberculosis. The animal, however, was in a fair condition, and was in an advanced stage of pregnancy.

When first seen by me she was lying in a low, damp meadow, and with much difficulty she was induced to rise upon her feet.

Being started to walk, she would travel in small circles to the left. By performing a succession of such movements and by attracting her attention with a bright light, we managed to bring her within one hundred yards of the barn, where she went down and seemed to be paralyzed in the fore legs, since when she attempted to get up she could only get upon her knees.

My first impression was that she was suffering from simple acute meningitis, and was treated accordingly. A brisk cathartic was administered, along with chloral hydrate; she was also bled, because she was quite plethoric.

The next morning (Sept. 14th) she was removed to the

barn by a sled, and it was there that the first thorough examination of her general condition was made.

At times she was in an excited condition, and sometimes would pass into a condition of partial coma. At other times a marked improvement could be seen in her condition, but it was only temporary, as she would soon relapse into the same comatose condition.

The pulse was irregular and very peculiar, as there seemed to be an inequality in the strength of the beats, this being probably due to pressure on the roots of the pneumogastric nerve in the medulla. The respirations were rather hurried, and the temperature was never over  $103^{\circ}$  F., averaging from  $102.2^{\circ}$  F. to  $103^{\circ}$  F. The pupils were dilated. The discharges from the bladder and rectum were involuntary.

The cow groaned as if in great pain, but of course was not, owing to her comatose condition. During the day she coughed several times, and, on investigating the cause, sibilant rales were heard over a large surface of the left lung, and, on percussion, evidences were found of a large abscess. The right lung seemed to be healthy. The cervical and inguinal glands were enlarged and hard.

It was upon these symptoms and from the fact that several other animals of the same herd were suffering from tuberculosis, that the diagnosis of acute tubercular meningitis was made and a suitable prognosis given.

Sept. 15th.—Cow was in the same condition, but was not coughing; while giving an enema, foetal movements were quite marked, and on examining the vagina shortly after giving the enema, the os was found dilated and parturition not far distant.

Sept. 16th.—The cow seemed to be resting easier, but about 10 A. M. gave birth, with some little assistance, to a live calf.

The offspring was strong, healthy, and of "full term." After parturition the mother became very much excited, throwing her head to one side, trying to get up, moaning and showing symptoms that we usually find in parturient apoplexy.

The next day (Sept. 17th) she was in the same condition,



but became much worse in the evening, and the owner was advised to have her destroyed. She died about 11 P. M. that night. An autopsy made about 10 A. M. on the 18th revealed the following alterations: Vessels of the brain were engorged, especially those of the pia-mater, and a colorless fluid was spread over the latter.

The lateral ventricles contained an abnormal quantity of a serous fluid, but the third and fourth ventricles seemed normal.

A deposit of miliary tubercles was found over the pia-mater and also along the course of the larger arteries; the largest tubercle was at the base of the brain; it was about the size of a bean and slightly caseous. The spinal cord was not examined.

On opening the thoracic cavity the bronchial and mediastinal glands were found to be enlarged, hard and cheesy; the left lung was full of abscesses of various sizes, the largest being as large as a cocoanut and filled with a cheesy, purulent mass. The right lung contained several tubercles about the size of a pigeon's egg, but no abscesses were found.

The peritoneum was also covered with miliary tubercles throughout its extent. All the other organs were normal, with the exception of a cystic kidney, and the uterus, which was of necessity slightly congested.

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#### OBSTETRIC CASES.

By Dr. C. H. PEABODY, Providence, R. I.

As we see so much about rabies, tuberculosis, graduates and non-graduates, I thought a report of two or three practical cases might be of some interest to your readers.

On Sept. 22d, about 6 o'clock P. M., I was called to see a silver terrier bitch that was trying to whelp, and had expelled one dead pup at about 3 o'clock that P. M., and had been straining quite hard ever since.

On examination I found a breach presentation, also that the posterior part of the croupe could just be reached with the middle finger. I at once applied the forceps which I

have for the purpose, and extracted, so to speak, a little fellow all right, which the mother at once began to take care of, at the same time keeping up a severe straining.

In about five minutes I made another examination, and found a head engaged in the pelvic opening. I waited five minutes longer for the result by nature, but another examination showed no progress, so I again applied the forceps and relieved the bitch of another pup, and about the same mode of treatment was pursued until she was relieved of five pups, she not being able to expel them herself. The bitch had been a perfect house dog, not being allowed to run at all, and had been carried up and down stairs, and fed on cake, etc. She was given brandy and milk after her delivery, with a good, generous diet of cooked meat. She and her pups are now doing well.

Again, on October 3d, I was called to see a mare, claimed to be due to foal on October 25th. She was a large gray, five years old, with one foot of the foetus protruding from her vulva. On inquiry I found that the mare had been having colic for about two hours, getting up and lying down every few minutes, but had not perspired much. She had been given some Somerville fever drops and some hot whisky, and the foot had been out about five minutes before I came. On examination I found the head below the rim of the pelvis and the other foot turned back at the knee. I got a small rope attached to the knee, another to the foot already out, and placed the mare off of a platform so that her hind quarters were about two feet higher than her forward parts. I placed my hand on the back of the neck of the foetus, and a good strong man to my back, he being braced against the wall, so that, when the mare did not strain, with a good steady shove I pressed the foetus forward enough to get the nose up, and with a cord on his under jaw and a thumb and fingers on the nostrils, by giving a good strong pull on the legs and jaws when the mare strained, we succeeded in delivering her of a live foal, which by a little artificial respiration, some blowing into the nostrils and the good attention of the mare, lived and is now quite lively.

Finally; On October 11th I was called to the Friends' School of this city to see a cow that was trying to calve, and found a large Holstein with both forward legs of a calf protruding from her vagina. On examination I found an anterior presentation, with lateral deviation of the head toward the abdomen and deep down in the abdominal cavity of the cow; so much so that I could not bring any part of my hand or fingers to touch any part of the head. I at once, after a good pull, decided to cut the legs and not waste time trying to straighten it.

Taking a hooked knife, I split the skin of both fore legs from the outside of the shoulder to the fetlock, separated the joint and then dissected the skin back on each cut through the pectoral muscles. I then attached a rope to the knees and got a couple of stout men to pull strong and steady, and so got the forward extremities all away, one at a time.

I then passed a rope around the curvature of the neck, and again tried the virtue of a good pull, but it was not a success. I then with my hooked knife cut into the thoracic cavity, cutting along the sternum and emptying it and the abdominal cavity of their contents, and had another pull with the same result as before.

Until now the cow had been standing, but now she went down on her side and would not make an effort to get up; and oh, how she would strain! To stop the straining, as I could not do a thing, the foetus blocking the cavity so that I could not get my hand beyond the rim of the pelvis, I cut a slit in her trachea about two inches long, and presto! no more straining, and the cow got up and stood on her feet all the rest of the time.

After she got up I inserted my hooked knife into the thoracic cavity of the foetus and got it hooked on to the vertebræ, having a good stout cord attached to the handle, and, keeping a hand on the handle and letting another man do the pulling and I the guiding, I soon had the vertebræ separated; and then, with a hook and cord and the help of the men, I soon had a part of the neck pulled forward from the skin; then with the rope that was around the neck, by pulling tight

on it, I separated the head and neck from the body, and by attaching a rope to the neck and with two hooks through the skin and by three men pulling, we pulled out the head and neck. Then I got the two hooks into the trunk and pulled the rest of the foetus out.

I gave the cow three ounces of alcohol and half a pint of water and a pail of warm slops, covered her warmly, and left her with directions for more alcohol about evening.

The cow is doing well, feeds well, and is milking good.

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#### A PECULIAR CASE.

By H. B. PRATT, V.S., St. Louis, Mo.

Monday, Oct. 6th, at 5 P. M. I had a call to go twelve miles to see a sick mare. The owner having come in on the train, he rode back with me. It gave me a good opportunity to get the history of the case, which I had a hard time in doing, and only did so by relating cases that had come under my observation. It had the effect of carrying my employer's thoughts back further than I could have otherwise. He had kindly informed me his mare was paralyzed; that her feed was good corn (eight to twelve ears), hay and when not in use would turn her out on the grass; he drove and rode her a great deal; was known as the best road animal in the neighborhood; had owned her five years and was never sick. On Tuesday, Sept. 30th, came to town; she was fed, as he was informed, a nice bran mash; she had never had a feed of that kind since he owned her. Starting home she showed a looseness of the bowels, and he recollected that she seemed fuller than usual; did not show any pain. Next day, Oct. 1st, did not use her, and he thinks she ate her food; did not see anything unusual. Oct. 2d he rode her; the only thing he could see was that she did not walk as fast as usual. Oct. 3d he did not like the way she acted when urinating; would step around, and, as he said, dance a jig. He led her two miles to the neighborhood horse doctor. He said "Your mare has a slight attack of paralysis, and will be all right in a day or so;" rubbed her back and gave a small quantity of medicine. Oct. 4th would pick

grass, and when walking would give away slightly, recover and walk on, would lie down, seeming to rest, and not very often either; showed no violent symptoms of abdominal pain, would reach around and bite lightly at her sides. Oct. 5th, Sunday, about same symptoms, only that during the night of the 4th she broke her stall. They attributed that to being cast, she at times having trouble getting up, owing to the paralysis. Oct. 6th she showing no change for the better, he concluded to call me; when we arrived the mare had been dead thirty minutes. It was very dark. After looking at the body I remarked, "She looks to me as if she had had some abdominal trouble," but never dreaming of such by his description of symptoms, etc., I concluded I would hold post-mortem. After removing abdominal muscles, etc., very carefully I was surprised to see the intestines burst out; the peritoneum had ruptured about eighteen inches in the median line. The abdominal cavity contained a great deal of bloody fluid; all other organs seemed healthy as far as I could see by the poor light (we were in the woods); the inješta of cœcum and colon were dry and hard. The surprise was still to come. On reaching the stomach I found it very large and containing very compact inješta. I took it out, sent for scales, and found it and contents to weigh forty-two pounds. I cut around the greater curvature and removed the stomach; there lay the contents perfectly moulded; had to be pulled apart; found corn, oats, grass, etc. I do not think anything passed from her stomach from Sept. 30th, and that the weight of it ruptured the peritoneum. The mare's weight was not over eight hundred and fifty pounds.

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AMERICAN VETERINARY COLLEGE—HOSPITAL DEPARTMENT.

RECURRENT TUMORS IN A BITCH.

By A. F. BEOKER, D.V.S., House Surgeon.

This patient was a spaniel bitch, nine years old, brought to the hospital for a large, firm growth about four inches in diameter, adjacent to and behind the posterior mammary gland, close to the inguinal regions. The tumor had been there about three months and was now increasing rapidly.

On the second day of admission she was placed under the influence of ether and the tumor removed in the usual way by an incision made through the skin at the base and enucleation of the growth. This weighed twenty-three and a half ounces. The flaps of the skin were well trimmed, the wound thoroughly washed with bichloride of mercury, 1 to 1,000; the edges of the wound were brought together by interrupted sutures and a dressing of absorbent cotton was applied, with a bandage all round the body. The subsequent treatment consisted in washing and dressing daily with the same solution of bichloride, and at the end of the fourth day the edges of the wound were found firmly adherent; no suppuration had taken place, making a perfect cicatization by first intention. Eight days later the patient was discharged, the wound being entirely healed.

Shortly afterwards a lymphatic gland of the opposite side began to enlarge, and nine days after being discharged she re-entered the hospital with a second tumor, firm and very painful on pressure. Again etherized, the enlarged lymphatic was removed and found to weigh ten and a half ounces. The course of treatment was the same as in the first instance, with the same result, and the patient was discharged five days later.

Three weeks later she was again returned, having this time an enlargement about two and a half inches in diameter at the point where the first operation had been performed. Third etherization and third tumor, four and a quarter ounces in weight, was removed, followed by same treatment and result—complete adhesive union.

Some fifteen days later two other tumors made their appearance, one close to the place where the second had been removed, and the other beneath the vagine and extending backwards to near the vulva. These were removed painlessly with cocoaine and the wounds allowed to heal by granulation.

Again, a week later, another growth appeared; this one on the right flank. Its removal was followed by a rapid healing process.

The dog had by this time been abandoned by the owner, and the treatment was merely kept up to see how far the dis-

eased process might extend. Soon here and there on the flank and on the abdomen other tumors began to appear, growing more rapidly; in general condition the animal began to lose ground, emaciation rapidly progressed, and ultimately the poor dog was, for the last time, chloroformed and destroyed.

At the post-mortem the following conditions were found: the thoracic lymphatics were considerably enlarged; the lungs were filled with numerous nodulated, firm masses; the mediastinum being also extensively covered with growths of the same kind, varying in size; the abdominal organs were found normal. Microscopic examination of these tumors was not made.

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### LARGE CARCINOMATOUS TUMOR IN A BITCH.

BY THE SAME.

A setter bitch, nine years old, was brought to the hospital with the following history:

About one year previously she had pups, which all died. Shortly after the mammæ of the left side began to enlarge, supposed to be due to mammitis. For the past few months the animal's appetite became poor, and she began to emaciate rapidly.

Upon examination, a large, firm growth was found to extend from left axilla backward to about the third nipple, measuring twenty-nine inches in circumference, twenty-three inches at its point of attachment to peduncle, and supero-inferiorly three inches to six laterally. On inferior surface was a large cutaneous ulcer, from which a thin serous fluid was oozing. Brachial lymphatics also considerably enlarged. Operation advised, and on following day hair clipped, and parts thoroughly washed with a solution of bichloride of mercury, 1 to 1000. A ten per cent. solution of cocaine was injected at several points around its base, and at the end of ten minutes a tumor weighing seven pounds was removed, with no evidence of pain whatever. Enlarged lymphatics also removed. Antiseptic dressing applied, and stimulants administered.

Unfortunately, patient never rallied, and died three hours after being operated upon.

## PSEUDO-RABIES IN A DOG—POST-MORTEM.

BY THE SAME.

The subject, a large pointer, having died the night previous, after showing suspicious symptoms, was sent to the hospital for post-mortem, with a view of ascertaining, if possible, the cause of death.

The symptoms, as related, were as follows: Excessive thirst; able to swallow very little. Thick, ropy saliva flowing from both corners of the mouth. Dull, depressed look, anxious countenance, and just before death a slight dropping of the lower jaw.

Post-mortem revealed thoracic organs normal; bladder partially filled with urine. Stomach greatly distended with food, as were intestines, until ilium was reached, which showed *intussusception* at four places, to the extent of about one inch at each.

The portion of the intestine involved presented all the symptoms of inflammatory action, and formed a complete obstruction to the alimentary canal.

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## BIBLIOGRAPHY.

MANUAL OF HYPODERMIC MEDICATION. BY DRs. BOURNEVILLE AND BRICON. Revised by G. Archie Stockwell, M.D., F.Z.S., Member New Sydenham Society, London.

Dr. Stockwell is already well known, not only as a writer on subjects relating to human medicine, but also to readers of veterinary literature, by the numerous articles which have from time to time appeared in the pages of the REVIEW. Today we take pleasure in noticing the publication of a revision made by him of one of the best books on hypodermic medication published in the English language.

This mode of administering medicines is not as yet as frequently employed in our domestic animals as it is in human practice—for no special reasons, perhaps, unless it be the more frequent appearance of complications in animal disorders than is the case in human patients—but it is evidently certain that the old way of balling, drenching and so on is gradually



passing away, to be replaced by more delicate and less *horsy* methods, such as are used in the administration of alkaloids by the dosimetric process, trachial injections and now hypodermic medication. In bringing the subject before the medical profession—human and veterinary—as Dr. Stockwell has done, we feel that he has aided the cause of comparative medicine to a considerable extent, and believe that the volume which he has presented to us will prove to be of much advantage to all veterinarians as well as to physicians. The book is nicely gotten up, forms a volume of little over 100 pages and is published by George S. Davis, of Detroit, Michigan.

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THE PRINCIPLES AND PRACTICE OF VETERINARY SURGERY.

BY PROF. WILLIAM WILLIAMS—Seventh Edition—(Sabiston & Murray, New York).

Yes, the seventh edition. What does a scientific work need by way of recommendation and as evidence of appreciation of its value more than those few words?

It is but a few years—since 1872 being the year of the first edition, if we are not mistaken—when Professor Williams presented to veterinarians his excellent work on veterinary surgery, and at frequent intervals since he has issued editions of his original work, each time enlarging it by the addition of new features of value, and this, the last issue, follows this admirable habit of its predecessors. The book has been for years the best book of all English-reading veterinary schools and has thus found a good market, but medical or veterinary books must keep up with the times if they wish to command and keep the appreciation of scientific men. Professor Williams' works are excellent, their publication has added much, very much to English veterinary literature, but there still remains in the Practice of Surgery room for improvement and even for correction, together with space for the introduction of those new ideas and methods which, in the constant progress of the science, have already met the approval of the profession, and which we hope, for the benefit of veterinary science, we will find in the next issue. The work is gotten up in the same manner as its predecessors, contains two pages more of reading matter and has one more illustration than the sixth edition.

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## SOCIETY MEETINGS.

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### MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, Boston, on September 24th. The President, Dr. Thomas Blackwood, occupied the chair, and the members present were Drs. Ferguson, Hadcock, Howard, Marshall, Osgood, Peterson, J. S. Saunders, Winchester, and the Secretary; also Dr. Stickney, honorary member; Dr. E. C. Beckett, as guest; and Dr. Emerson, the essayist of the evening.

After the transaction of the routine business, Dr. Emerson read a paper on "Punctured Wounds of the Foot, involving the Joint," at the conclusion of which the following discussion took place.

Dr. Ferguson asked the essayist how he accounted for the emaciation being more rapid following wounds of the hind feet than those of the fore feet. The essayist thought that it might be because it is harder for a horse to stand upon two fore feet and a hind foot than it is upon two hind feet and one fore foot.

Dr. Howard thought that next to a case of colic at two o'clock in the morning, he knew of nothing that would make a man more tired than a badly punctured wound of the foot. He said he wanted to see it as soon after it occurred as possible, and to be sure and pare it off enough. He also spoke of a plan of treatment suggested to him by a certain irregular practitioner of Boston, for horses which had lost the use of a foot, which he thought a very brilliant plan. It consisted of a crutch which this man claims to have invented. It can be fastened on the lame leg and the horse turned out to pasture.

Dr. Marshall spoke of the application of Dr. Berns's pads to punctured wounds of the feet, as he had seen them used by the inventor during a recent visit to Brooklyn. The pad is first wet in a solution of fennel, and kept in place by a bandage. The foot can also be soaked in a pail or tub containing a solution of the fennel during the day.

Dr. Peterson liked to cleanse the wound daily with a solution of corrosive sublimate, applied with a syringe.

Dr. Beckett said he used a strong solution of carbolic acid, eighty-five to ninety per cent., made soluble by adding glycerine; it seems to have a powerful effect in stimulating the injured parts to heal, when applied early.

The President also spoke of the use of carbolic acid: in one of the car stables under his charge it is customary to pull the nail out after it is picked up, and then to pour a few drops of carbolic acid into the nail-hole at once, and often with very good results. He did not approve of paring off too much horn at first in these cases, as it was not always necessary.

Dr. Howard said that he had often obtained very good results on many kinds of wounds, on various parts of the animal, by painting the part with an eighty-five or ninety per cent. solution of carbolic acid, applied by a glass rod.

Dr. Howard moved that a vote of thanks be given the essayist for his paper, and that the Secretary cast a ballot for his admission as a member of this Association. Being seconded by Dr. Marshall and carried, the Secretary cast the ballot, and Dr. Emerson was declared elected a member.

Dr. Stickney spoke of a case where a horse picked up a screw-driver without a handle, from which he made a good and speedy recovery.

At the request of the President Dr. Winchester then gave a brief account of his visit to Chicago and of the meeting of the United States Veterinary Medical Association on the 16th and 17th of September.

Dr. Osgood brought up the subject of rabies by reporting a suspicious case of his at Springfield, the dog being in a cell at the police station, under observation. He had bitten two children, but it was still uncertain whether he was really rabid or only vicious. This led to quite a discussion upon rabies, the President, Drs. Winchester, Stickney, Ferguson, Beckett, Peterson and the Secretary taking part.

The conversation turned to the subject of paralysis of the muscles of the lips, face, nostrils and eyelids in horses; the President, Drs. Hadcock, Peterson, Beckett and the Secretary stating cases which had occurred in their practice.

Adjourned.

AUSTIN PETERS, *Secretary.*

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## IOWA STATE VETERINARY MEDICAL ASSOCIATION.

COUNCIL BLUFF, IOWA, OCTOBER 10, 1890.

The next meeting of the Iowa State Veterinary Medical Association will be held in Des Moines, November 13-14 next. This society seeks to include in its membership all regular graduates of veterinary medicine, in good standing, located in Iowa. A cordial invitation is extended to attend the meeting.

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# AMERICAN VETERINARY REVIEW,

DECEMBER, 1890.

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## EDITORIAL.

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INOCULATION OF CONTAGION THROUGH MUCOUS MEMBRANES.—The study of contagious diseases inexhaustible—continuous increase in knowledge concerning them—rabies, with all its related controversies—the light is yet far from being perfect—Prof. Galtier's new investigations—the healthy mucous membranes are gates open for the entrance of virus—glanders an exception to it—Director Nocard's experiments—careful cleanliness will protect against it. REAPPEARANCE OF TUBERCULOSIS IN MAINE.—Dr. Bailey's previous work in ridding the State of it—vain expectations of permanent relief—a new outbreak in the old quarter—Massachusetts the breeding-bed of the new invasion—that State full of the disease—thirty-five to fifty per cent. of her cattle infected—our previous remarks on the subject—our statement at the Fifth International Veterinary Congress confirmed—the useless criticisms made on it—it is of Massachusetts as of many others in the Union. KOOR'S "CURE" FOR CONSUMPTION.—The great discovery creates admiration, enthusiasm and anxiety—patients pouring into Germany—the reticence of the profession—of the scientific and medical press—so far the name of the great German physician secures the reception of the statements advanced—interesting and important to all—specially to veterinarians—may Paratoloid prove what it promises.

INOCULATION OF CONTAGION THROUGH MUCOUS MEMBRANES.—The study of diseases in general, and especially of those of a contagious nature, is constantly forcing itself upon the attention of pathologists, and notwithstanding all the light that has been already shed upon the various points involved in the related topics connected with these affections, there seems to be no exhaustion of the material, but rather, some novelty constantly developing for further examination and new discussion. Almost weekly we have new forms, new phases, and new names of diseases—especially the last—

pressed upon our attention, and only a nimble student can keep up with the times, in this race of knowledge. Prominent among these is rabies, concerning which so many theories have been suggested and abandoned, and so much unjustifiable criticism indulged in, that it would almost seem that nothing more could be invented or imagined to put in print touching upon the etiology of the affection. And yet the light is far from being perfect, and many obscure questions still remain to be solved.

Among the more attentive of the observers and students of rabies may be mentioned Professor Galtier, who has industriously worked the field. One of the results which have rewarded his investigations is the alleged possibility of inoculation of rabies through the medium of healthy mucous membrane. The professor has successively experimented touching the virulent action upon the digestive, respiratory, ocular and genito-urinary membranes, and he has proved that the disease can be transmitted, within various periods of time, at least in some cases, if not in all, through the mucous membranes, with perhaps an exception in favor of that of the genito-urinary canal.

In a pathological point of view these results are of great importance, and may serve to illustrate the etiology of a case in which the mode of introduction of the virus, followed by the appearance of all the symptoms, might not be known. But the possibility of this mode of inoculation does not seem to be established as good for all diseases, nor for all the mucous coverings, a fact well illustrated by the results obtained by Director Nocard in his experiments with the virus of glanders when brought in contact with the intact skin. Director Babes of Bucharest has already written on this subject, and the experiments of the learned Director of the Alfort School were made with a view to confirm if possible, those published by Dr. Babes. The results obtained served evidently to prove at least one important fact, viz., that it is a very unusual occurrence for the inoculation to take place through a skin perfectly intact. He inoculated three donkeys and fifteen guinea pigs with rabies cultures, and of all these only two of the pigs died with glanderous lesions.

These results are very reassuring for such veterinarians as are liable to be brought into frequent contact with glanders, showing conclusively as they do, that the simplest measures of cleanliness are perfectly sufficient to protect those whose skin may have become soiled with a glanderous discharge.

REAPPEARANCE OF TUBERCULOSIS IN MAINE.—The State of Maine has suffered largely from the prevalence of tuberculosis amongst her cattle, and it is but a few years since that Dr. Bailey, the veterinarian of the State Cattle Commission, condemned a large number of cows as suffering from the disease, and condemned the entire herd to destruction. It was then hoped and expected that by careful watching it would be possible to escape further loss and damage from the disease, but the necessary vigilance, and the wise suggestions of the doctor were not sufficiently heeded, and with the introduction of a new supply of cows, together with that of seven cattle bought in *Massachusetts*, the disease has reappeared, and once again the State may be made to suffer from the widely diffused malady.

In procuring them from *Massachusetts*, they were procured from a State which, according to the Doctor, is “full of the disease;” infested to such an extent, indeed, that he “believes that from thirty-five to fifty per cent. of her cattle population are infected.”

The large experience with tuberculosis acquired by Doctor Bailey renders this estimate every way reliable, and strongly corroborates our own opinion, already repeatedly expressed on other occasions in columns of the REVIEW. Our statements have been attacked by persons who have had but scant opportunities for the substantiation of their criticisms, and as a partial answer to their strictures, we again refer these friends to the words of the State Veterinarian of Maine, which we have just quoted. No doubt we could obtain more and additional support for our views, if we felt inclined to inquire, not only from almost every State in the Union, but even from *Massachusetts* itself, from whence came the undeserved criticism of our statement to the Fifth International Veterinary

Congress. We stated then that it was not an uncommon thing to find herds in which tuberculosis was present to the extent of fifty per cent. Dr. Bailey states that in Massachusetts, "The cattle are filled with tuberculosis," and he believes "that from thirty-five to fifty per cent. of the cattle in that State are infected."

KOCH'S "CURE" FOR CONSUMPTION.—The articles upon the latest discovery of Prof. Koch which are published from day to day in the German papers, and transmitted to America by telegraphic despatches, are giving rise to a great deal of admiration and enthusiasm, as well as anxiety, among scientific and medical men; and while nothing very positive is as yet known concerning the new discovery of the learned German, every one is anxiously and attentively watching for the description of the details of the method which is announced, and for the results which may follow the treatment to which many sufferers from tuberculosis are now being subjected. From every part of the world patients are pouring into the German laboratory, ready to receive the treatment which has, it is reported, already given satisfaction and appears to have received the full sanction and approbation of the many scientific and medical men who apply it.

Many of the medical journals and physicians are, however, careful in expressing their opinion on the great promises that the new treatment seems to make, and if it were not for the high esteem in which Prof. Koch has always been held, because of the integrity of his purposes, the honesty of his labors, and the care which he has always exercised in all his investigations—in other words, if it was not the great German physician who presented the new treatment, it is very probable that the announcement would not have had the reception which it is now receiving. To the public at large, for the physician, for all, in fact, the new treatment as now indicated will be welcome, and the name of its discoverer will deservedly pass to posterity as having made one of the greatest, if not the greatest discovery of this century. And yet there is one point which we think, as veterinarians, deserves careful consideration, viz., the application of Koch's



treatment to the relief of the many animals which are suffering with the disease, and which by it from valuable are metamorphosed into dangerous animals, and which in so many instances prove one of the most common means of transmitting the disease. Let us all hope that the subcutaneous injections of "Paratoloid" will prove as applicable and beneficial in the lower class of phthisic patients as it is promised it will prove in the higher class, the human family.

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## ORIGINAL ARTICLES.

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### PARTURIENT ECLAMPSIA IN THE MARE.

By W. L. WILLIAMS, V.S., Bloomington, Ill.

(A paper read before the Illinois Veterinary Medical Association.)

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It seems somewhat strange to the comparative pathologist that in all the larger domestic animals, save the mare (and in woman); there should occur a well-marked group of convulsive diseases having an intimate relation to the parturient state.

In the mare no such disease is described, so far as I have been able to determine, unless we except the bare hint of Fleming (Fleming's Veterinary Obstetrics, p. 660), who, in speaking of parturient apoplexy of the cow, says; "It is worthy of notice that the first stage of parturient fever—viz., the stage marked by congestion of the brain—is observed in the mare. It soon terminates in death, as is also sometimes the case with the cow, as a result of apoplexy. Such cases, though not sufficiently substantiated by the result of autopsies, have been described by Gerard (Veterinarian, 1874). The mares in question died during parturition, or soon after."

As will appear later, Gerard's cases were evidently essentially different from those I propose to describe as eclampsia.

The only mention I find of what appears to be the same disease as that under consideration is a brief sketch by Professor Williams in his Principles and Practice of Veterinary Medicine, under the name of hysteria.

My views of this disease are based almost wholly upon

my personal experience, and although some of my cases occurred about eight years since, most of them are of recent date.

My first cases were widely separated, and my observations extending over only a very brief part of the full course of the disease, only a small part of the entire train of phenomena of the malady were noted, so that I failed to connect the individual cases as all belonging to one group, depending upon one cause. Regarding them as isolated cases, which might never recur, and being wholly at sea as to a proper diagnosis, notes were not taken, and so I must trust to memory for what I wish to say.

More recently a hurried succession of cases presented themselves so forcibly and distinctively that some solution for their existence was demanded, but before any definite line of thought had been acquired, my cases were all gone, and what might have been a very interesting field for careful study had vanished.

Awaiting the return of such favorable opportunity for a more complete study, I shall venture to lay before you such observations and conclusions as circumstances warrant, trusting thereby to awaken an interest in this undescribed malady and lead some of you to make and record more definite and valuable deductions regarding it.

My first case occurred some eight years ago, in an adult grade draft mare, which had at her side a healthy, vigorous foal, some ten to twenty days old. The mare had foaled naturally and easily at the ordinary time, and the very apparent vigor of the foal showed clearly that she had been furnishing an abundant supply of milk. The owner reported that a few hours prior to my arrival the mare suddenly became strangely nervous, assuming a wild look, with staring eyes, restlessness, stiffness of gait, twitching of the muscles, occasionally lying down and getting up, the symptoms all rapidly increasing, until she lay prostrate on her side, unable to rise. In this position I found her, the whole muscular system exceedingly rigid, breathing labored, convulsions constant, pupils greatly dilated, mucous membranes livid, firm trismus,

and the muscles of her limbs so rigid that they could not be flexed sufficiently to raise her upon her chest. She succumbed a few hours later, and no autopsy was made, the case being attributed to some occult cerebral affection due to the parturient state.

The second case I am able to recall occurred some two years later, the subject being a high grade draft mare, used exclusively for breeding purposes, and aged about five or six years.

The mare was quite large, very robust in appearance, had foaled five to ten days previously without difficulty, and the foal at her side was very vigorous and well nourished.

I found the mare lying apparently quiet on her sternum, showing no evidence of suffering, and looking quite bright and healthy.

Upon approaching her, however, she showed marked nervousness, and at once tried to get up, but appeared to have lost the power of co-ordination; was quite weak, and her efforts brought on clonic spasms of a severe character, her hind legs knuckling at the pasterns, much as in azoturia.

During my stay she became more nervous and uneasy, making repeated unsuccessful attempts to rise; respirations rapid and laborious, constant and severe tramps of the entire body, tremblings and profuse perspiration, all of which appeared to decrease in intensity when we would withdraw and permit her to become more tranquil.

The passage of the catheter increased the convulsions quite markedly, there apparently being hyperæsthesia of the vulva, probably of the body generally.

I diagnosed azoturia, and prognosticated a favorable termination. Later observations have shown me that mares with young foals do not, or rather can not, contract azoturia; besides, the fact that the mare had been running at grass constantly, precluded the possibility of that disease. I might point out further differences, but these two essential facts in the history of the case are sufficient to show that I erred in my diagnosis, and the early death of the animal showed an equal error in prognosis.

I recall no more distinct cases until the summer of 1889, when an unusual number occurred in rapid succession and showing every degree of intensity.

At this date our rapidly developing horse breeding interest had about reached its maximum in my locality, so that large numbers of mares were kept solely for breeding purposes, and favorable weather furnished exceedingly luxuriant pasturage, the grasses being unnaturally watery.

During the season of 1889 I now recall seven well marked cases, several of which offered favorable opportunities for observation throughout a greater part of their course.

One, a well-bred road mare, in high condition, with a vigorous, well-nourished foal, some eight to ten days old, at her side, was brought from the pasture preparatory to being bred. Soon after her arrival at the owner's stable the mare was noticed to be restless, nervous, the eyes somewhat staring, and occasional muscular twitchings. Most noticeable of all was a peculiar, very well-marked throbbing of the chest, which shook the entire body. It seemed like an exaggerated heart-beat, and was quite regular in time and force, but was not rhythmical with the heart-beat. The disturbance seemed greatest along the line of attachment of the diaphragm to the ribs, and the phenomena could be attributed to no other cause than clonic spasm of the diaphragm. There was some trismus present, but not sufficient to prevent eating with relish and comparative ease.

With quietude and moderate doses of belladonna and cannabis indica, she made a good recovery in a few hours.

In another case I was called to attend a half-blood draft mare, aged five to seven years, in prime condition and perfect health prior to the date of my visit. She had foaled five to ten days before without trouble, and the foal was vigorous and well nourished. She was then brought from the pasture for the first time and placed in the stable, and within a few hours symptoms of disease were manifested.

I found the animal in great pain, very nervous, and easily disturbed by any movements or noise. She lay down quite frequently, and while lying became more tranquil, all the

symptoms abating. While down the animal lay on the sternum, and did not attempt to roll; in rising she did so with apparent ease. While standing there was constant clonic twitchings of the muscles of the entire body, spasmodic movements of the limbs, frequent changes in posture, trembling, profuse sweating, the nostrils widely distended, the movements stiff, as in tetanus. There was no protrusion of the membrana nictitans over the eyeballs, but the eyes were staring and pupils dilated, and the conjunctivæ were dark livid in color. There was severe trismus, the jaws being wholly immovable, and as in the preceding case there was violent spasm of the diaphragm. She was bled freely from the jugular, and given large and repeated doses of belladonna and cannabis indica. For about thirty-six hours the symptoms remained about the same, when they began to abate rapidly, and in 48 to 60 hours after the beginning of the attack the mare was in her usual health.

On the same day, on a neighboring farm, I attended another grade draft mare with a similar history of recent easy parturition, healthy foal at side, etc., and which prior to my arrival had shown a similar train of symptoms to those noted above; but the owner delayed calling me, so that upon my arrival I found the animal prostrate on her side, the whole muscular system thoroughly tetanized, the eyes set and insensible to light, firm trismus, well-marked opisthotomos, repeated severe convulsions of the entire body, readily increased or caused by any sudden noise

Barring the want of protrusion of the membrana nictitans and the greater nervousness, the case closely simulated a recumbent case of tetanus. The animal succumbed after about twenty-four hours.

In another case I was called to attend, a full blood draft foal, some five or six days old, was suffering from lameness, and in order that it might be well attended the mare was brought from the pasture and placed in the stable. The next morning I was hurriedly called to attend the mare, which I had seen the previous day in apparently perfect health and unusually robust and vigorous. Upon my arrival at the farm

I found the mare greatly agitated, the whole body tetanized, with constant clonic twitchings, spasmodic movements of the limbs, hurried, labored respirations, nostrils widely dilated, visible mucous membranes of a dark livid hue, firm trismus, and profuse sweating. When on her feet she could not stand still, but continually moved about involuntarily and so very uncertainly that she could scarcely be approached with safety. The perspiration was so profuse that it streamed from the dependent parts of her body, the nose was poked out, the head elevated, the back arched, the tail erected, giving the entire body the posture assumed in severe tetanus, but the well-marked protrusion of the membrana nictitans seen in the latter disease was wanting. The animal would lie down frequently, and usually on the sternum, in which position she became more tranquil and apparently obtained some relief; at other times she lay prostrate on her side, in severe convulsions, the legs all rigid, so that the upper feet did not touch the ground, but projected in a straight line from the body. The spasm of diaphragm was so violent in this case that even when the mare was lying on her sternum her whole body shook very markedly at each contraction, and when standing fifteen or twenty feet distant a loud thumping noise could be heard, emanating from the chest, like violent palpitation of the heart, but upon close examination it was found that it bore no relation to the heart-beat.

With great difficulty, owing to the uncertain convulsive movements of the animal, I drew about three gallons of blood from the jugular. This was followed by heavy and repeated doses of fluid extract belladonna and cannabis indica, about  $1\frac{1}{2}$  drachms of each every hour.

My prognosis was very unfavorable, as death seemed imminent. After twelve to fifteen hours the symptoms rapidly abated, and within twenty-four hours after my visit she was apparently in her usual health.

In another case—the last to come under my observation—a high grade draft mare of vigorous constitution, and with a well nourished, healthy foal, some fifteen to twenty days old, at her side, was taken from the pasture for the first time since

foaling and put to light farm work, and in a few hours she had developed all the symptoms enumerated in the preceding cases, and when I arrived she was unable to regain her feet, rapidly growing worse and dying the same day, within twelve hours from the time she was brought from the pasture in prime condition, and only five to eight hours after the beginning of the attack. My other cases were similar, and need not be detailed here.

How common this affection may be in the experience of others I have not learned. Messrs. Ullrich, V.S., of Decatur, and Stringer, V.S., of Danbury, have each related to me one case of what appears to have been the same. A gentleman recently related another case to me which must have been of the same character.

The subject was a little imported pony mare in high condition, with a well nourished foal at her side, about six to eight weeks old. Some children came to visit the owner's little girl, and the pony was brought in from the pasture for the first time since foaling, a saddle put on her and then placed in the hands of the children, who used her for a few hours in the morning, and on being brought in at noon the stableman found some difficulty in removing the bit from her mouth.

This attracted no particular attention, but when the owner attempted to bridle her again after dinner and failed on account of the firm trismus, it was evident to them that something was wrong. A veterinarian was at hand in a few hours, but the pony rapidly developed all the symptoms enumerated above. She was bled from one jugular on the first, and the other on the second day. Other treatment was carried out, but its exact nature is unknown to me. In about forty hours after the beginning of the attack the symptoms suddenly abated, and within forty-eight hours from the beginning the pony was apparently as well as ever.

This case was, I was informed, diagnosed as tetanus, but, like my diagnoses in several cases, it was certainly incorrect. True, in the literal meaning of the word it was tetanus, but it was not the affection we ordinarily know by that name in human and veterinary practice.

We have here a series of cases presenting varied symptoms, as we would expect to find in different animals, at different stages of development of the disease, yet passing from one into the other by an imperceptible scale, all evidently due to the same cause.

In the earlier stages and in the very mild cases throughout, all showed the restlessness, the staring, pouiretting eyes, the muscular twitchings, the clonic spasms, especially marked in the diaphragm. In proportion to the nervousness, the pulse and temperature suffered little. If unchecked, the clonic spasms were largely succeeded by those of a more tonic nature, trismus became a marked symptom, the restlessness and convulsions increased in intensity, the respiration became more labored, the mucous membranes livid from partial asphyxia, the whole muscular system becomes tetanized to its fullest extent, the animal is no longer able to stand nor to find relief in lying on the sternum, but lies prostrate on the side in constant convulsions until it succumbs, probably from asphyxia.

Their histories, too, are quite uniform. All were robust, vigorous mares, in high condition, of mature age, but not old; all had recently foaled naturally and easily, and had healthy, well nourished foals at their sides, showing that the mammary glands were well developed and active in all cases.

In nearly if not all the cases I have related, the mares had been enjoying unrestricted freedom at pasture constantly since foaling, and then taken up a few hours prior to the attack, which was suddenly ushered in without warning.

Professor Williams (Prin. and Prac. Vet. Med., p. 726), under the name of "Hysteria," describes what seems to have been the same affection, in the following words: "Concurrent with the period of œstrum in the female, the following symptoms, viz., clenching of the jaws, grinding the teeth, difficulty of swallowing, some degree of trismus, squinting of the eyes, tonic spasms alternating with those of a clonic kind, continual kicking, in an irregular, uncontrolled manner, with one or both hind feet; stamping of the fore feet, and other nervous excitement, have been observed in the mare and female ass.



“In one case that I saw, the two fore shoes and one hind shoe had been thrown off by the violent kicking and stamping. Attempts were made to remove the remaining one, which was loose; they were, however, unavailable, as the slightest touch caused the most violent kicking. The animal would fall, the whole trunk and neck being perfectly rigid, whilst the limbs continually moved in a violent and spasmodic manner. The power of volition seemed to be completely lost. The gluteal muscles were exceedingly hard and prominent. The rapid opening and closing of the vulva and its highly injected mucous membrane indicated the hyperæsthesia of the genital organs. Urine was passed abundantly, at first pale and watery, but afterwards highly colored, and loaded with solid matters.

“In another case the symptoms were rather different. The animal was prostrate, rigid, with the eyes turned upwards, as if in a trance. They were both bled, and an endeavor was made to nauseate them with aloes, and to allay the nervous irritability with opium. One recovered, the other died. For the prevention of this condition I can only suggest that the sexual desire be gratified, if possible, whenever such a state of excitement short of the above presents itself.”

Prof. Williams fails to inform us if his cases had foals at their sides and had passed through the same conditions as those I have observed. I do not recall the appearance of œstrum in any of my cases, which he relates in his; surely it was not marked in any of them, or I should have noted it.

How he manages to call the affection hysteria without drawing heavily upon his imagination, is more than I can comprehend. The principal factors in the causation of so-called hysteria in women, such as “sudden fright or horror, powerful religious impressions, disappointed love or hope deferred, grief, jealousy and the like, unhappy marriage, etc.,” rarely if ever enters as an essential factor in the etiology of this disease in mares.

A careful study of the causation, history, symptoms, course and termination of hysteria in women fails to afford the slightest resemblance or parallelism in any respect with

this affection of mares ; and when Prof. Williams in the above quoted chapter advises early and abundant sexual intercourse as a prophylactic or remedial measure in this "hysteria" of mares, he certainly assumes a position that is open to severe criticism.

If the gratification of sexual desires constituted a reliable remedial agent for the cure of hysteria, there would certainly be less of it in the human family, and few cases would run so chronic and protracted a course.

Barnes (System. Obstetric Med. and Surg., p. 283), probably defines hysteria well when he says: "It is not too much to say that hysteria is an *asylum ignorantie* which will one day be closed." I have been unable to find a place for this term in veterinary medicine.

The cases I have related go far to show that the disease is one following closely upon parturition, that it happens in animals in prime condition, which have foaled easily ; the foals have lived and were quite vigorous, forcing us to the conclusion that the mares were heavy milkers.

It also happens at a time in the mare's history when the blood has a recognized increase of water over the ordinary state, and my cases happened at a season when the grasses were very luxuriant and "washy," owing to heavy rains, thus augmenting the quantitative plethora-hydræmia.

It seems that a sudden change of surroundings, a change from freedom to the stable or harness, probably by causing maternal anxiety for the foal, has an essential influence in the immediate causation of the disease.

The symptoms indicate a grave disturbance of the central nervous system, expressed for the most part in convulsions and spasms of the striated muscles, and I have consequently chosen to place it along with other parturient convulsive diseases, under the name of "eclampsia."

Comparing the disease of mares with the parturient eclampsia of woman, we find as close parallelism as can reasonably be expected. While the majority of cases of parturient convulsions in women appear prior to or during labor, it is true that *all* the cases of this affection in mares which I

have been able to collect occurred *after* parturition ; but it is equally true of the convulsive affections dependent on parturition in the other lower animals. The parturient apoplexy of the cow, and the parturient eclampsia of the cow, bitch, goat and sow, as described by Fleming and other writers, occur almost, if not wholly, after parturition.

Fleming, in his "Text Book of Veterinary Obstetrics," disagrees with Franck, who, in his "Geburtschilfe," attempts to establish the identity of the parturient convulsions of woman with parturient apoplexy of the cow ; and while the former is forced to admit that Franck occupies a somewhat tenable position, he remarks that "the eclampsia (of woman) is essentially epileptic or convulsive, the convulsions being of a tonic and clonic nature ; and though, in the disease of the cow, convulsions are sometimes present, yet they are far from being a constant symptom." Fleming differs widely here from my personal observations with parturient apoplexy of cows, for while admitting coma as the most impressive phenomenon, I have rarely seen cases in which, at some stage, well defined convulsions were not present, and in the earlier stages we have quite uniformly found strong resemblance between the symptoms of apoplexy in the cow and those which are said to occur in the puerperal convulsions of woman.

After opposing as strongly as possible the ideas of Franck as to the identity of these two affections, Fleming remarks :

"But if we cannot at present admit that this bovine disorder (parturient apoplexy) and eclampsia of woman are the same, there is a malady which attacks not only the cow, but also the goat, bitch and sow, and which certainly closely resembles the human disease."

Under this head, then, of parturient eclampsia, Fleming proceeds to describe a convulsive parturient affection of the goat, bitch and sow, which certainly closely resembles in history, semiology, course and termination, the disease of woman, and along with them he describes a convulsive affection of cows equally resembling the human affection. This eclampsia of cows it has been my fortune to observe several times, and some of my cases, after a few hours, developed

into typical cases of parturient apoplexy, while others ran a mild course, without coma, to a favorable termination. In fact, the parturient eclampsia of cows, as described by Fleming, passes by insensible gradations into parturient apoplexy, so that so far as we can determine by clinical observation, the non-febrile, post-parturient convulsive and comatose affections of the various lower animals belong in one group and are dependent upon one cause.

That these affections in different species, or in animals of a different temperament or under different conditions in the same species, should present variations in symptoms in the relative nervous irritability or coma, is perfectly natural.

We note a close correspondence in the character of the patients affected by parturient convulsions, all being those of apparent vigorous constitution, and in those occurring after parturition the labor has been easy.

The symptoms we have enumerated as occurring in the mare bear a close resemblance to the eclampsia of other lower animals, and of woman, as well as to the early stages of parturient apoplexy of the cow.

Like eclampsia in the other lower animals, and in woman, the disease in the mare is ushered in suddenly, runs a rapid course of twenty-four to forty-eight hours, and terminates as abruptly as it began, rarely in partial, usually in complete recovery, or in death.

The diagnosis should apparently be quite easy in all cases. The history of the case so far as observed seems of special value. The clonic and tonic spasms, the extreme trismus and the peculiar spasm of the diaphragm, are quite characteristic. It may be confounded with:

(a). Tetanus, from which it is distinguished by the sudden onset, the earlier and more complete trismus, the greater nervous irritability and greater tendency to clonic spasms, the greater tendency to lie down, the dilatation of the pupil and pouiretting of the eyes, the much less marked protrusion of the membrana nictitans over the eyeball, the absence of any antecedent wound, the far more rapid course and usually more favorable termination.

(*b*). Cerebro-spinal meningitis, from which it is to be separated by its history, its more sudden onset, its cramp unaccompanied by paralysis, its well marked trismus, rapid course and more favorable termination.

(*c*.) Azoturia, from which it differs essentially in attacking animals not subject to that affection—that is, mares enjoying unrestrained liberty and having young foals. Aside from the fact that azoturia cannot be induced in such animals, the spasms are more general over the entire body, the trismus is characteristic, and the urine neither so abundant nor highly colored.

The treatment should evidently consist first of quietude and comfort. The foal should be allowed with the mare. In my cases free blood-letting apparently alleviated the symptoms, if resorted to early.

Fluid extracts of belladonna and cannabis indica in large and repeated doses apparently allayed the excitability and exerted a favorable influence upon the course of the disease.

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## INFECTIOUS ABORTION.

By J. F. REID, V.S., Decatur, Ill,

(A Paper read before the Illinois Veterinary Medical Association).

The alarming prevalence of abortion throughout the country generally during the past few years, and especially the past year, entailing great loss on the horse-breeders of the country, surely requires close attention from the veterinary profession, and thorough experimental investigations should be made to discover the cause, and if possible some preventive for this terrible scourge.

Outbreaks of abortion in an epizootic form have been known and recorded from the earliest times, and although all agree as to their destructiveness, in this country there have been no thorough investigations made as to the cause or the amount of damage inflicted each year. Now the loss in certain localities is very great, and I am confident that it is not an over-estimate for me to give as the loss suffered in the dis-

strict where I practiced during the past year, as fully forty per cent. of the mares impregnated. Although such a loss of the foals, with the keep of the mares and the service fee of the sire, is very great, yet in many instances it is not all, as the mare occasionally is lost or fails to conceive the following season, and in some cases for several seasons after.

In Europe, Fleming asserts "that the chief loss occurs with cattle, and very little with mares," but in my experience I have known comparatively little loss with cattle except in sporadic cases. This possibly may be accounted for by the difference in keep in the two countries.

In attempting to discover the cause of infectious abortion, men are baffled by the obscurity which attends its development and the different opinions offered by those giving it any attention. Some authorities adduce that outbreaks start from a sporadic case, whether accidental or otherwise, and that a nervous impression is made on the mare or mares in close proximity to the affected one, and thus conveyed from one to the other until all or nearly all have aborted. Regarding general causes, Fleming says that the disease is most frequent during wet seasons when it is probably due to anæmia, as well as to forage damaged by moisture, ergotised or otherwise altered. Manure scattered over the pastures and decomposing has also been offered as a cause. The local conditions to which animals are subjected cannot be adduced as the cause, as animals abort under every kind of regimen, in all conditions and irrespective of age or breed.

The assertion that an accidental abortion occurring among a number of pregnant mares is competent to develop the infectious germ that inoculates other animals, and causes general abortion, I certainly think is unfounded. Of course an outbreak may first show itself in a mare that has been injured, as the injury might facilitate the action of the infectious germ, but I do not think that any injury is necessary for the production of the disease. I have frequently observed that where a mare running or having been kept with other pregnant mares has received a known injury and aborted, or has been a regular aborter at a certain stage of pregnancy, and

even when the foetus and membranes have not been removed for some time, I have never known where such an abortion has been followed by a general abortion of the mares that were in connection with the one affected.

In many instances when the first mare aborts, you will be informed by the owner or attendant that he believes she has received some injury, but such information is founded on about as much knowledge as that which the average man possesses who asserts that the animal affected with periodic ophthalmia has been struck by an attendant in the eye.

The weather, wet or dry, warm or cold, appears to make no difference in this country, as the disease becomes epizootic during seasons of different temperature, appearing in some localities during a very cold, dry winter and in others just the opposite.

For a great many years the best authorities have believed that infection has played the sole part, and I do not think there will be much question here as to that, but from what does the infection spring? Is it necessary that an accidental abortion take place, and from the decomposition accompanying it the infectious germ is developed which is conveyed to others with such disastrous results? or is the germ developed independently and under certain favorable conditions attacking the foetal membranes, causing decomposition and subsequent abortion? I do not believe that the first proposition is correct, but I am inclined from my own observations to believe that the latter is. Probably it is true that the infection becomes greater after redevelopment in the foetal membranes. Fleming states that mares that have carried their foetus nearly through the normal period of gestation, resist the infection and foal all right at the natural time. My experience has been that the period of gestation makes no difference, as mares lose their colts after having gone ten months and even longer. In such cases it is not uncommon to have a malpresentation with difficult parturition. The period of incubation is doubtful, and it can only be determined by careful experiments. I have seen mares that had been removed from a place where several abortions had oc-

curred, abort in two or three weeks after, showing all the symptoms of those from which they had been removed.

The mares after abortion usually need very little attention, but occasionally uterine and vaginal troubles occur, some of which are very serious.

Last winter on a large stock farm having pregnant mares, an outbreak of abortion occurred with the direst results. Two imported Percheron and three common mares were lost that had aborted, and every known precaution was taken to check the disease and preserve the remaining mares, but scrupulous cleanliness, thorough disinfection, changes of food and location from one part of farm to another, proved of no avail, as the mares continued to abort. When only three remained, working on the theory that the infectious germ gained admission through the genital canal, I had mercuric solution applied to the vulva and part of the vagina every day. One aborted in a few days (which in all probability had been inoculated before the treatment was begun) while the remaining two carried their foals the natural time, and delivered them healthy and strong.

This experience does not by any means conclusively prove that the treatment preserved the mares, as it is possible that they would have carried their foals without it, but, perhaps, it is a step in the right direction and as opportunities present themselves, I intend to satisfy myself that it is really efficacious. I have not gone into a detail of symptoms, treatment, etc., which we all are acquainted with, but have aimed to stimulate a discussion that may possibly shed some light on the cause.

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## SCROFULOUS OSTITIS IN FOALS.

By W. F. WEESE, V.S., Ottawa, Ill.

(A Paper read before the Illinois Veterinary Medical Association).

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The above appellation is used by Professor Williams to designate the disease to which I wish to call your attention. Walley has given the term specific arthritis or



synovitis. By some writers it is considered a constitutional disease, by others scrofulous in its nature, while others, especially the latter school of veterinarians, consider it pyæmic or septicæmic in origin, and a sequel to or identical with omphalo-phlebitis.

The causation of the disease is ill understood, and the etiological factor has led to a diversity of names. The appellation used in the heading of this paper is a misnomer; I do not think omphalo-phlebitis is applicable in all cases or covers the pathology of the disease acceptably, while the term specific arthritis gives an insufficient latitude of signification.

The object in presenting this paper is more with a view of directing your attention to the disease, and soliciting your individual experiences, than to casting any light on the etiological phase of the disease, and should I before its conclusion venture upon debatable ground, I am desirous of being understood as only advancing conclusions which have not been sufficiently verified by experimentation to withdraw them from the range of hypothetical conjecture.

The disease has received attention from some of the leading veterinarians of Europe, being described as early as 1781, at Turin, by Brugnone. Among the most prominent investigators may be mentioned Roloff, Bollinger and Walley, from whose writings I have drawn much valuable information. Williams advocated as the intrinsic cause of the disease, a scrofulous diathesis, and ascribes the suppuration of articulations to deposit of a degraded form of albuminoid matter, which excites a form of strumous inflammation leading to ulceration of articular cartilage, and caries, and attributes the pervious urachus to a deposit of tubercular matter at the urachus which prevents the adhesion of its walls.

The term scrofula is being restricted in its application by medical writers and practitioners, it formerly having an indefinite latitude of meaning. The morbid product is now believed by leading micro-pathologists to be, if not truly tuberculous, bearing almost an identical resemblance. There is abundant proof I think, that the disease is not constitutional or hereditary. The fact that the disease occurs only during

lactation militates against, if not disproves, its scrofulous or hereditary origin.

The eminent pathologist Bollinger made a series of investigations as early as 1870, and his opinion, founded on clinical observations and post-mortem appearances, merits the greatest consideration, not that I believe his etiology is correct in detail, but his observations suggest something of the life history of the germ which is undoubtedly the cause of the affection. The result of his observations led him to believe that there was a complete analogy between this disease and omphalitis occurring in maternity hospitals. He thus attributes the pathological processes to an inflammation of the umbilicus, septic in origin; there is inflammation of the umbilical vein, the decomposed and softened thrombus communicates with the vena portæ and forms a source of metastatic septicæmia or pyæmia, affecting synovial membranes and involving at times the pleura, pericardium and choroid coat of the eye. The lungs and other internal organs become affected from the same source. Walley does not adhere to Bollinger's view as to septic infection taking place at the umbilicus, but insists that the primary cause of the disease is the imbibition of milk from the dam which is septicæmic or pyæmic. In an article treating on the disease in lambs he says, "that it is due to and must be associated with an altered condition of the mother's milk is proved by the fact that it only attacks young animals while sucking the dam; that ewes coincidentally die from malignant parturient fever, though it must be borne in mind that it is not necessary that the ewe should exhibit any external symptoms of a diseased condition of the blood."

Roloff's observations led him to believe that the disease was at times congenital. I have witnessed the advent of this malady in such a manner that I have thought the idea worthy of consideration. An autopsy of a colt fifteen days old, which had succumbed to this disease, revealed the parts approximating the urachus in a healthy condition, and showed no trace of former inflammatory action; upon examination of the liver it was found soft and friable, and containing a cavity as large as a walnut, filled with inspissated pus which was so

hard it was with difficulty crushed with the hand. The hardness of the pus led me to think that the cavity might have been a center of suppuration during intra-uterine life, and the point of departure of the subsequent disease. Williams (*Principles and Practice of Veterinary Medicine*, p. 716), says in connection with an article on nephritis: "The next case was that of a foal two days old which had died from acute suppurative arthritis. A post-mortem examination revealed not only the presence of pus in the tissues surrounding the articulations, but sundry purulent points in the kidneys, the pus in which being more or less inspissated or caseous. I look upon this case as important, as to some extent it supports the view that 'joint disease' occurring in young animals is not always a primary disease, but secondary to the formation of pus in other parts of the organism."

Another case which came to my notice may be mentioned in this connection. A colt in breeding a high grade Norman was foaled with a large umbilical cord, measuring about two or two and a half inches in diameter. I saw the colt when only a few hours old and it seemed lively, but showed unmistakably signs of previous inflammation of umbilical cord. The parts were kept as nearly antiseptic as possible by washing with bichloride solution and the application of absorbent cotton. The patient died on the fifth day from omphalitis and showing symptoms of arthritis.

Taking my experience with the disease as a criterion, I should say that the dam occasionally is the medium by which the colt gets the specific germ, or at the least is responsible for the susceptibility of the foal. In support of this opinion I submit the following: The disease occurs more frequently among the heavy draft breeds, it being very rare in the light harness horse. Plethora, past system of breeding or some non-specific condition or influence must be present in this class of dams to render the foal more susceptible to the micro-organism. My attention has been directed to a few draft mares, the majority of whose foals would succumb to the disease. Two cases in particular. A Clyde mare lost three out of five colts, the last two of which were given special care

from time of birth to prevent septic infection taking place at the umbilicus. The second, a Norman, in breeding had three colts in succession affected, the last of which made a recovery. This mare always had more or less mammitis subsequent to parturition, and the colt which made the recovery was taken from her and placed on a mare which lost her colt from accidental causes.

Again the post-mortem examination of subjects does not invariably reveal present or previous inflammation at the umbilical region, which would reasonably be expected if the umbilicus was always the point of ingress of infected material.

I have thought, although my clinical and pathological researches have not been sufficiently extended to warrant the assertion, that there was a difference between this suppurative joint disease and omphalitis proper. However, I will desist from taking up that branch of the subject in the present paper.

*Symptoms.*—The symptoms, depending upon the localization of pathological lesions, are variously enumerated, of which I shall only give a synopsis. The premonitory symptoms are usually increased respirations and pulse, elevated temperature varying from normal to  $105^{\circ}$  F., and an injected appearance of the mucous membranes. Concomitant with or succeeding these phenomena, the urachus may be pervious, although it is not by any means a constant symptom. Diuresis is present, especially during the onset of the attack, the urine being very light in color and ordinarily giving an acid reaction. The specific gravity averages about 1040 and upon microscopical examination reveals several fat globules and occasionally renal casts. Digestive irregularity is not an unusual condition found present, manifesting itself by constipation or diarrhœa. The characteristic swellings make their appearance in various parts of the body, usually involving the articulations, producing a painful arthritis. The animal may be found stiff and lame without any visible enlargements, which is likely to lead the attendant to attribute it to an injury incurred by the dam's stepping on the foal. The swellings are round, have a doughy feel on manipulation and are in-

tensely painful. During the incipient stage they may be more or less metastatic, which might lead one to attribute them to rheumatism; however, they are unlike rheumatismal swellings in being subject to suppuration and a general destructive process.

The patient occupies the recumbent position a good deal of the time and relieves the pressure at the affected joints as much as possible by flexion. Should the disease be progressive, the muscular abscesses burst if not opened mechanically, discharging a white colored, offensive pus. The swellings of the articulations and surrounding synovial sacs become soft, the contained fluids and semi-solids escaping, leaving sinous ulcers which do not readily heal. The discharges are fœtid when osseous and ligamentous structures are involved. Dropsical effusions with the serous cavities and the lax connective tissues are of common occurrence. Erysipelatous inflammations, involving the integument around abscesses, naval and local dropsical swellings, are conditions with which the practitioner has to contend at times.

*Post-mortem Appearances.*—Post-mortem examinations reveal many different lesions. Among the most common may be mentioned inflammation of umbilical vessels with thrombosis in process of suppuration, purulent arthritis and intra-muscular or subcutaneous abscesses. The liver at times exhibits the alterations of acute parenchymatous hepatitis; abscesses form in the organ and the extension of inflammation of the umbilical vein to the hepatic ramifications of the vena portæ are found. The kidneys, heart and lungs may be affected; the spleen is frequently soft in texture and comparatively bloodless. Catarrhal enteritis, accompanied by hyperplasia of the mesenteric glands, irido-choroiditis and tumefaction of the bronchial and other glands are conditions found present less frequently.

Examination of the bones where arthritis has been severe will reveal caries, deposits in the cancellated structure, softening of the cartilages uniting the epiphyses by cellular proliferation, thickening of periosteum and its detachment in places, ulceration of articular cartilage and ligamentous attachments.

*Sequelæ.*—Three cases which had apparently made complete recovery from the disease have been brought to my notice subsequently, suffering from complications which undoubtedly had their origin in the malady. Two of the foals seemed well and thrifty till about one year old, when swelling and lameness at the stifle was detected. In one case both joints were involved, while in the other but one was affected. The same articulations were implicated during the acute attack of the disease. Treatment in both cases proved fruitless, the patients gradually growing worse till unable to rise. The subjects were destroyed, showing the capsule of the affected joints greatly inflamed, the ligamentous structures were a pale yellow and soft and easily detached from insertions. The cavities of joints and serous sacs contained sero-purulent fluid. The articular cartilages were ulcerated in spots both within the femoro-tibial and femoro-patellar articulations, and the synovial apparatus was perforated in numerous places. The third case at the age of eight months commenced to show symptoms not unlike chronic rheumatism, becoming distorted in all of its limbs, one hock was greatly inflamed, the same being affected during the acute attack of the disease, and was doubtless similar as to diseased processes as the other cases given. Unfortunately no post-mortem was held in this case, which detracts from its merit as a citation.

*Prognosis.*—It is always advisable for the veterinarian to be guarded in prognosis, as the mortality is very great under the most favorable conditions. Some writers record the death rate as high as sixty and eighty per cent. This however is higher than my experience with the disease would indicate, especially if treatment is resorted to at the first manifestation of symptoms. If suppuration is established when the veterinarian is consulted an unfavorable termination may be predicted in almost every instance.

*Treatment.*—Too much importance cannot be attached to the prophylactic consideration of the disease. Recognizing the affection as micro-organismal in origin and the umbilicus as one of the points of ingress of infected material, it behooves the practitioner to recommend that the umbilical cord be

thoroughly antiseptized and a ligature applied close to the abdominal wall as soon after the colt is foaled as possible. I have witnessed the practical workings of this mode of procedure for some time and am convinced that its adoption will cause a diminution in the number of foals affected with omphalitis. The hygienic surroundings of foal and dam are important factors in prophylaxis and must not be overlooked. The medicinal treatment of this disease has been very unsatisfactory and is so yet in a great many instances, especially so when treatment has not been resorted to at the very commencement of the attack. The treatment of the disease manifestly must be directed towards preventing suppuration, palliating the digestive and assimilative irregularities, and modifying the local manifestations of the malady.

A purgative or laxative is usually indicated to remove the poisonous, effete and excrementitious matters which are the cause or source of digestive irritability, and to restore as near as possible the secretions to their normal constituents. The therapeutic agent best suited to the purpose is castor oil, with which a little bicarbonate of soda may be advantageously combined. One to three drachm doses of sodium salicylate administered from four to six times daily, exert a powerful action on the pyrexia and have a tendency to prevent suppuration, doubtless by their antiseptic action on the pathological organism of the disease. Small doses of alcohol in combination with the salicylate in the first stages may be given with benefit. The dose of salicylate of sodium should be gradually decreased as the temperature falls, and during convalescence potassium iodide may be substituted. After the subsidence of the action of the purgative and the temperature is not high, syrup of hypophosphites may be given in one or two ounce doses three times daily. This preparation, containing to each fluid ounce :

Hypophosphite	Potass	- - - - -	grains	$1\frac{1}{2}$
"	Lime	- - - - -	"	1
"	Iron	- - - - -	"	$1\frac{1}{2}$
"	Manganese	- - - - -	"	1
"	Quinine	- - - - -	"	$1\frac{1}{2}$
"	Strychnine	- - - - -	"	$\frac{1}{16}$

is a very efficient auxiliary in the treatment of the disease.

Locally, fomentations and anodyne embrocations should be applied. The application of blisters during the acute stage is of doubtful utility and I believe the practice pernicious, as it tends to increase the pain and consequent restlessness—factors to be combatted. During cold and damp weather the requisite amount of heat should be kept to inflamed joints by flannel bandages and a dry, well-bedded box insisted upon for the foal and dam's occupancy.

If the urachus is pervious it should be taken up and ligatured according to the rules usually laid down for that operation. Should abscesses form the care and treatment require no special mention. And lastly, the condition of the dam should be scrutinized and if there is reason to believe that the milk is deleterious in quality the colt should be taken from its mother and placed on another mare or fed cow's milk.

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## OSTEO-POROSIS.

BY DR. GEO. H. BERNS.

(A Paper read before the Long Island Veterinary Society.)

Among the many diseases that a practising veterinarian meets with, I know of none that terminates more unsatisfactorily to the owners of live stock, and is more annoying and of less credit to the practitioner than the complaint known as *osteo-porosis*, or big head.

Hundreds of animals are annually lost in this city alone, from this disease, and the veterinarian when called in has, in the majority of instances, but little difficulty to diagnose the cases, but unfortunately that is all he can do. He can be of little service to the animal, and from our present knowledge cannot even give the owner satisfactory information as to its probable causes, nor advise preventative measures. An interchange of views and free discussion upon this subject by the members of this Society will no doubt bring out many points of interest and value, and with this object in view I have prepared these few lines.

Upon symptoms, except a few premonitory ones, I will



waste no time, for the characteristic enlargements of the bones of the face and lower jaws have been frequently seen and recognized by all, but in many instances we are called weeks or even months before any such well developed symptoms exist. We find a horse lame on the near hind leg, with a history that he has been lame for some time, starts off on his toe when first leaving the stable and warms out of it after he travels awhile.

We carefully examine the hock, pastern and foot, but fail to find anything abnormal, excepting a slight coarseness of the hock. Under the circumstances we consider ourselves justified to diagnose spavin, and fire and blister the hock and order the patient turned out to pasture for one or two months. In three or four weeks after the operation we are notified that our patient is not doing well and, requested to visit him again in the country, we find him lame in the left shoulder this time, otherwise apparently all right. We attribute the shoulder lameness to some accidental injury or perhaps rheumatism, prescribe a mild liniment and advise the owner to keep his horse tied up in a dry stable for a short time.

Two or three weeks later we are called again, find the patient all crippled up across the loins. We begin to look for enlargement of the lower jaw, but are unable to express a positive opinion; advise anti-rheumatic treatment, horse taken up and placed in a good dry stable. Two or three weeks later we are called again and find our horse with a peculiar elongated condition of the thigh, and point of hock coming down to within six or eight inches of the ground when forced to place weight upon the affected limb, and with well marked enlargement of lower jaw. Of course the case is plain enough, we have made a mistake in our original diagnosis and caused the owner to spend considerable money upon an incurable patient.

The premonitory symptoms, therefore, are of the greatest importance. Stiffness across the loins, causing the animal's gait to be of a peculiar rigid character, is in my opinion the first and probably the most suggestive premonitory symptom in the majority of cases; next of importance is obscure lame-

ness, particularly if involving more than one limb. While I do not wish to say that lumbago and rheumatic lameness do not exist in horses, I am satisfied that seventy-five per cent. of all the cases diagnosed as such will turn out to be cases of osteo-porosis. In many cases a general unthrifty condition of the animal, and partial loss of appetite without any apparent cause, may also be noticed in the early stages. English veterinarians have evidently given the subject considerable attention. Very many cases are on record, and the symptoms and post-mortem appearances, as well as the structural changes in the bones, as revealed by the microscope and chemical analysis, have been carefully studied and minutely described by Prof. Varnell, Dr. Harly, Prof. Williams and others. Germany, the acknowledged centre of scientific investigation, has, as far as I have been able to ascertain, contributed little or nothing to the knowledge of this disease, and it is therefore reasonable to infer that it cannot exist in that country to any great extent.

Now let us speculate upon the probable causes and consider the length of time it takes to develop. The English, basing their opinion largely upon animals out on pasture or confined in farm stables, seem to think that defective assimilation and mal-nutrition are the probable causes, and Prof. Williams in his *Surgery*, finishes his very able article on the subject by saying: "In all probability it will be discovered that the disease is due to the absence of some essential ingredient of the food or its presence in such small quantities as to be insufficient for the necessities of the animal, or the presence of some other ingredient in such super-abundance as to destroy the perfect composition of the aliment as a whole and thus render it unfit for assimilation, or so change it as to cause it to become even an irritant to the osseous system of the animal." As I have not been able to find the subject referred to in any other work at my command, I take it for granted that his views upon this disease are probably generally accepted by English veterinarians.

My experience with the disease, taking it from a practical point of view, compels me to question the soundness of Prof.

Williams' opinion. I have seen and in some instances observed for months a very large number of cases in this city. Some years ago, when this disease was not as well understood and not as popular (if I may use the term) among veterinarians as it was now, it is my good fortune—or misfortune, I hardly know which—to come in contact with some ten or twelve cases inside of a few months.

In 1879, shortly after I graduated, I saw my first case of osteo-porosis, and there being one or two interesting events connected with it, I will here briefly refer to it. A bay gelding, six years old, the property of a well-known grocer, had been attended by a self-educated veterinarian of good standing for a number of weeks for intermittent lameness, distemper and a peculiar swelling of the head to which the owner had repeatedly called his attention and for which a liniment had been prescribed. When I was called in to see him some eight or ten days after the above-referred-to practitioner had discharged him as being cured, the animal presented all the symptoms of an ordinary acute case of influenza, but upon placing my finger upon the submaxillary artery I was surprised at the immense thickness of the inferior maxilla, and viewing the side of his face I could not help but notice a peculiar fullness under the eyes—in fact the animal's head presented a very striking appearance even to an ordinary observer. Questioning the owner elicited the above history. A diagnosis of osteo-porosis was made and the owner informed that his horse would very probably speedily recover from the influenza, but I advised him to dispose of him as soon as he was well, for the other complaint was positively incurable, and would render the animal useless for the remainder of his life—basing my opinion purely upon lectures heard at college and Prof. Williams' writings upon the subject. A few days later meeting Dr. H. Hausman—as you all know, a regular graduate in veterinary medicine, and an able practitioner of probably thirty or forty years standing, having practiced in this city, to my knowledge, for about twenty years—I related the case to him; he manifested considerable interest in the same and expressed a desire to see it. Dr. H. and myself visited the patient the next day and the doctor admitted that

it was a peculiar case, that he had never seen one before, and asserted that if he had been called in he would have certainly put the animal under experimental treatment, as the case was of such an unusual character.

I willingly consented to place the patient under his care and he experimented with him for all of four weeks; at the expiration of that time the horse, being unable to masticate his food because of irregular, chisel-shaped molars which lacerated the palate, he was cast for operation upon his teeth, but being unable to rise again was either destroyed or died of exhaustion. The horse's head I prepared for a specimen and it is still in my possession. Since that time I venture to say that over two hundred cases have come under my observation in practice. I not only became deeply interested in the disease, but quite enthusiastic, and at one time I could see osteo-porosis in horses when no one else could, the result being that quite a few extremely embarrassing mistakes were made in diagnosis. Without any exception every one of the two hundred or more cases were found in cellar stables or in stables on the level of the street without cellars under them; most all of them were old stables that had been used for years, with the floors resting upon sleepers lying in the ground. A great many of the stables were located in sections of the city where the ground had been made by filling in swamps with street sweepings, ashes, garbage and material of that character. In stables of this description, containing twenty-five horses, I consider it nothing unusual to find one or two cases of osteo-porosis every year, and I could mention probably seven or eight grocers who keep but one horse each, that have lost or been obliged to dispose of two, and in some two or three instances three horses each during the last ten years from the disease, a large number of which were young animals examined by me for soundness before they were bought. In stables on the second floor or stables with cellars under them, or stables built on spiles even if on low ground, where a free current of air is allowed to circulate under the floors, I have never seen a case that originated or developed there, further than this: I have seen well developed cases showing intermittent lameness and enlargements of the bones of the face, changed from

one location to another, where the change seemed to arrest the progress of the disease, where the lameness subsided and the animals remained able to do their work for years after. A client of mine a few days ago, whose word can be relied upon, told me of a certain horse which I told him to dispose of some two years ago, having osteo-porosis so well marked that he himself noticed the enlargement of the facial bones first, and which had been sold to a farmer at that time. He had seen the horse recently, and the swelling of the bones of the head had disappeared, and the horse was doing good service for his present owner.

As to the period of incubation and length of time it takes to render the animal useless if kept in the same stable and under the same conditions, I should say from three to twelve months.

As to whether the disease can be transmitted from sire or dam to offspring, I am not prepared to say, as my practise is exclusively in the city, and the early history of the cases I have seen could not be traced.

I do know of two cases, however, where mares suffering from osteo-porosis had good healthy colts last spring and both colts up to this time are apparently in perfect health, both mares being dead.

According to Williams, Varnell was the first man to describe this disease in 1860 and it seems reasonable to suppose that it did not exist to any great extent prior to that in England. I am satisfied that there was none of it in Percival's time, for he was as careful an observer and as brilliant a writer as has ever contributed to veterinary literature.

In this country I believe it to be of comparatively recent origin. The very fact that Dr. Hausman had never seen a case prior to 1879, would strongly point in this direction.

As to causes: Considering the cases that have come under my observation, and more particularly the conditions and location of the stables in which these cases were found, I cannot help but conclude that a specific germ, vegetable or mineral, or perhaps a gas, the development or generation of which is favored by certain soils and certain conditions, are the most probable causes; and that this substance, whatever it may be, finds its way into the body of animals, acts specifically upon

the osseous system, and causes degeneration of a destructive character. From our present knowledge, it would be folly to attempt treatment. Prevention, however should be aimed at, and during the last six months I have made an effort to have all animals showing the slightest suspicious symptoms of osteo-porosis, removed to other stables, and in all stables where the disease appeared repeatedly I have had the floors taken up, and two or three feet of urine and manure-saturated soil removed, the old flooring-boards and sleepers carefully cleaned and disinfected, and a new supply of good, fresh sandy soil put down before the floors were replaced. In cases where it was possible to have the floors raised twelve or eighteen inches from the ground, I have strongly advocated to owners the advisability of doing so. As these preventive experiments have been tried by me for the limited period of six months only, I am not prepared to say at this time that they are of any special benefit.

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## PEROXIDE OF HYDROGEN AND OZONE.

### THEIR ANTISEPTIC PROPERTIES.

A Paper read before the International Medical Congress, held at Berlin, Germany, on the 7th of August, 1890.

By DR. PAUL GIBIER, Director of the Pasteur Institute of New York.

GENTLEMEN: Since the discovery of peroxide of hydrogen by Thenard, in 1818, the therapeutical applications of this oxygenated compound seem to have been neglected both by the medical and the surgical professions; and it is only in the last twenty years that a few bacteriologists have demonstrated the germicidal potency of this chemical.

Among the most elaborate reports on the use of this compound may be mentioned those of Paul Bert and Regnard, Baldy, Péan and Larrivé.

Dr. Miguel places peroxide of hydrogen at the head of a long list of antiseptics, and close to the silver salts.

Dr. Bouchut has demonstrated the antiseptic action of peroxide of hydrogen, when applied to diphtheritic exudations.

Prof. Nocard, of Alfort, attenuates the virulence of the

symptomatic microbe of carbuncle, before he destroys it, by using the same antiseptic.

Dr. E. R. Squibb,\* of Brooklyn, has also reported the satisfactory results which he obtained with peroxide of hydrogen in the treatment of infectious diseases.

Although the above-mentioned scientists have demonstrated by their experiments that peroxide of hydrogen is one of the most powerful destroyers of pathogenic microbes, its use in therapeutics has not been as extensive as it deserves to be.

In my opinion the reason for its not being in universal use is the difficulty of procuring it free from hurtful impurities. Another objection is the unstableness of the compound, which gives off nascent oxygen when brought in contact with organic substances.†

Besides the foregoing objections the surgical instruments decompose the peroxide, hence, if an operation is to be performed, the surgeon uses some other antiseptic during the procedure, and is apt to continue the application of the same antiseptic in the subsequent dressings.

Nevertheless, the satisfactory results which I have obtained at the Pasteur Institute of New York with peroxide of hydrogen, in the treatment of wounds resulting from deep bites, and those which I have observed at the French clinic of New York, in the treatment of phagedenic chancres, varicose ulcers, parasitic diseases of the skin and also in the treatment of other affections caused by germs, justify me in adding my statement as to the value of the drug.

But it is not from a clinical standpoint that I now direct attention to the antiseptic value of peroxide of hydrogen. What I now wish is merely to give a full report of the experiments which I have made on the effects of peroxide of hydrogen upon cultures of the following species of pathogenic microbes: *Bacillus anthracis*, *bacillus pyocyaneus*, the bacilli of typhoid fever, of asiatic cholera and of yellow fever, strepto-

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\**Gaillard's Medical Journal*, March, 1889.

†The peroxide of hydrogen that I use is manufactured by Mr. Charles Marchand, of New York. This preparation is remarkable for its uniformity in strength, purity and stability.

coccus pyogenes, micro-bacillus prodigiosus, bacillus megaterium and the bacillus osteomyelitis.

The peroxide of hydrogen which I used was a 3.2 per cent. solution, yielding fifteen times its volume of oxygen, but this strength was reduced to about 1.5 per cent. corresponding to about eight volumes of oxygen, by adding the fresh culture containing the microbe upon which I was experimenting. I have also experimented upon old cultures loaded with a large number of spores of the bacillus anthracis. In all cases my experiments were made with a few cubic centimeters of culture in sterilized test-tubes, in order to obtain accurate results.

The destructive action of peroxide of hydrogen, even diluted in the above proportions, is almost instantaneous. After a contact of a few minutes, I have tried to cultivate the microbes which were submitted to the peroxide, but unsuccessfully, owing to the fact that the germs had been completely destroyed.

My next experiments were made on the hydrophobic virus in the following manner :

I mixed with sterilized water a small quantity of the medulla taken from a rabbit that had died of hydrophobia, and to this mixture added a small quantity of peroxide of hydrogen. Abundant effervescence took place, and, as soon as it ceased, having previously trephined a rabbit, I injected a large dose of the mixture under the dura mater. Slight effervescence immediately took place and lasted a few moments, but the animal was not more disturbed than when an injection of the ordinary virus is given. This rabbit is still alive, two months after the inoculation.

A second rabbit was inoculated with the same hydrophobic virus which had not been submitted to the action of the peroxide, and this animal died at the expiration of the eleventh day with the symptoms of hydrophobia.

I am now experimenting in the same manner upon the bacillus tuberculosis, and if I am not deceived in my expectation, I will be able to impart to the profession some interesting results.

It is worthy of notice that water charged, under pressure,



with fifteen times its volume of pure oxygen has not the antiseptic properties of peroxide of hydrogen. This is due to the fact that when the peroxide is decomposed nascent oxygen separates in that most active and potent of its conditions next to the condition, or allotropic form, known as "ozone." Therefore it is not illogical to conclude that ozone is the active element of peroxide of hydrogen.

Although peroxide of hydrogen decomposes rapidly in the presence of organic substances, I have observed that its decomposition is checked to some extent by the addition of a sufficient quantity of glycerine; such a mixture, however, cannot be kept for a long time, owing to the slow but constant formation of secondary products, having irritating properties.

Before concluding I wish to call attention to a new oxygenated compound, or rather ozonized compound, which has been recently discovered and called "glycozone," by Mr. Marchand.

This glycozone results from the reaction which takes place when glycerine is exposed to the action of ozone under pressure—one volume of glycerine with fifteen volumes of ozone produces glycozone.

By submitting the bacillus anthracis, pyocyaneous, prodigiosus, and megaterium to the action of glycozone, they were almost immediately destroyed.

I have observed that the action of glycozone upon the typhoid fever bacillus, and some other germs, is much slower than the influence of peroxide of hydrogen.

In the dressing of wounds, ulcers, etc., the antiseptic influence of glycozone is rather slow if compared with that of peroxide of hydrogen, with which it may, however, be mixed at the time of using.

It has been demonstrated in Pasteur's laboratory that glycerine has no appreciable antiseptic influence upon the virus of hydrophobia; therefore, I mixed the virus of hydrophobia with glycerine, and at the expiration of several weeks all the animals which I inoculated with this mixture died with the symptoms of hydrophobia.

On the contrary, when glycerine has been combined with ozone to form glycozone, the compound destroys the hydrophobic virus almost instantaneously.

Two months ago, a rabbit was inoculated with hydrophobic virus, which had been submitted to the action of this new compound, and the animal is still alive.

I believe that the practitioner will meet with very satisfactory results with the use of peroxide of hydrogen for the following reasons ;

1. This chemical seems to have no injurious effect upon animal cells.

2. It has a very energetic destructive action upon vegetable cells—microbes.

3. It has no toxic properties ; five cubic centimeters injected beneath the skin of a guinea-pig do not produce any serious result, and it is also harmless when given by the mouth.

As an immediate conclusion resulting from my experiments, my opinion is, that the peroxide of hydrogen should be used in the treatment of diseases caused by germs, if the microbial element is directly accessible ; and it is particularly useful in the treatment of infectious diseases of the throat and mouth.

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## EXTRACTS FROM FOREIGN JOURNALS.

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### CHLORHYDRATE OF PILOCARPINE IN ACUTE DISEASES OF THE FOOT.

By DR. MODIGLIANI.

While acknowledging the benefits obtained by the use of this drug in the treatment of all rheumatic affections, the author also recommends it in acute diseases of the foot, as in laminitis (acute podo-flemmatitis). In a first case, that of a horse nine years old, he injected subcutaneously twenty-two centigrammes of chlorhydrate of pilocarpine, in solution with seven grammes of water, obtaining all the physiological manifestations of the medicine, ptyalism, abundant diaphoresis, defecation, etc., and with these a manifest improvement. After the first day, a second and third injection, given with the same results, brought on also a final recovery on the fourth day. In a second case, of a rheumatic nature, a similar result followed two successive injections of thirty centi-

grammes of the same drug. In the third case, an attack of laminitis in the fore extremities, following broncho-laryngitis, was radically cured by only two injections of twenty-two centigrammes of the pilocarpine. These cases were very wonderful in their results, and well deserve confirmation.—*Er-colani*.

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### SUBCUTANEOUS INJECTIONS OF SPIRIT OF TURPENTINE.

By DR. TRINCHERA.

In order to confirm the results following the subcutaneous or intra-muscular injection of irritating liquids, which were said in many cases to be accompanied with suppuration, the author has performed a series of experiments, taking at the same time all the antiseptic precautions necessary to prevent the establishment of the suppurative process. The experiments were tried upon horses, because of the well-known pyogenic predisposition of that animal. Injections of ten, fifteen, twenty, twenty-five, thirty, thirty-five and forty grammes of spirit of turpentine were made in the subcutaneous connective tissue of the shoulder, and in the thickness of the muscles. There was in every case a well marked inflammatory swelling below the point of injection, but it was never followed by suppuration.

*Conclusions.*—Spirit of turpentine can be administered by the skin with impunity, in as large a dose as forty grammes, so long as proper antiseptic precautions are observed.

2d. But this medication is scarcely justifiable on account of the large inflammatory swelling which follows its use.—*Clinica Veterinaria*.

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### TREATMENT OF ALL FORMS OF SEROUS CYSTS.

By MR. CHOBAUD.

Serous cysts are common in horses, and are observed in nearly all the regions of the body. The most common are those of the elbow (shoe boil), the hock, the anterior face of the fetlock, the knee, the internal face of the canon, the back, the loins, the withers and the thigh. The modes of treatment are numerous and varied, and in many instances unsuccessful. They include the douche, frictions, massage, punctures, pres-

sure, setons, deep cauterization, iodine injections, electro-puncture, etc.

The author recommends a treatment which, in twenty-five cases of various degrees of gravity, has been followed by rapid recovery after a duration of twenty days. The first indication is to puncture the cyst in the most dependent part, and to thoroughly evacuate its contents; then to fill the cavity well with oakum soaked in a concentrated alcoholic solution of bichloride of mercury (four grammes of bichloride to one hundred grammes of alcohol). The oakum is left in place for from twenty-four to forty-eight hours, and then removed. A severe inflammation is then established in the walls of the cyst, which rapidly brings on their adhesion and cicatrization. This treatment, short and certain, is based on the same principle as that by irritating injections.—*Repertoire de Pol. San. Vet.*

#### TREATMENT OF UMBILICAL HERNIA BY LUTON'S METHOD.

By MR. LENORMAUD.

This consists in the subcutaneous injection of a saturated solution of common salt, carefully filtered when cool. A colt having a large hernia was treated in this way, by the introduction of half of a syringe of Pravaz on each side of the hernial sac. After the injection a bandage was applied. The next day there was a large swelling under the abdomen, and extending under the chest, which began to diminish after a few days. The recovery was complete and radical in a month.—*Presse Veterin.*

#### PROLAPSUS AND LACERATION OF THE VAGINA IN A MARE —EVENTRATION—RECOVERY.

By MR. AUDARD.

A mare which had been delivered some fifteen days previous was suffering with prolapsus of the vagina. Before delivery and during the last months of gestation she exhibited the same condition, but it disappeared every time spontaneously. On this last occasion she was in pain; dull and making violent expulsive efforts. Between the lips of the vulva appeared a cylindrical tumor, of a red color and the size of a

man's head, at the lower end of which was a circular opening through which the finger passed into the neck of the uterus. The upper extremity was folded in its length, and was pedunculated by the contraction of the vulva. The tumor was smooth, and the slightest touch upon it excited violent expulsive efforts.

The diagnosis being well established, immediate measures were taken to reduce the organ to its normal position, this not being accomplished without a great deal of resistance on the part of the patient. Everything, however, seemed to be going on well, when, as the organ was about resuming its normal position, the hand of the operator slipped through the vaginal walls, and a large portion of the folded colon suddenly escaped through a longitudinal laceration of the upper wall of the vagina. More than a yard and a half was then protruding, but after many difficulties and much careful manipulation, everything was at length returned in place. An attempt to close the wound of the vagina was then successfully made, and it was secured by an interrupted suture. The parts being carefully washed and disinfected, the vulva was closed and secured with seven strong stitches, and a bandage applied upon it to resist the violent straining of the patient, which continued for some time. The prognosis of this case was very serious, and her death was expected during the night. The next day she was more comfortable, having had a good night, the efforts and the colic subsiding after a second dose of ether administered during the night. The fever had diminished and appetite had returned. The stitches of the vulva were removed, but the outside bandage was left in place. The third day convalescence was complete.—*Revue Veterinaire*.

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#### OVARIOTOMY IN A NYMPHOMANIC MARE.

BY MR. J. BOURGES.

In his excellent work upon the castration of nymphomaniac and vicious mares, Mr. Delamotte has made a careful distinction between the cases which are liable to be benefited by the operation and those in which the results are likely to be negative. Mr. J. Bourges reports a case which evidently belongs

to the first class and thoroughly illustrates the good that can be effected by the operation. A gentleman, a cavalry officer, had a mare which had by degrees become unmanageable, and dangerous to approach, even for the man who had her in charge. No other treatment appearing to have any effect, castration was decided upon, and the operation was performed in the standing position, the mare being secured in stocks and placed partially under the influence of anæsthesia. The operation was performed with all possible antiseptic precautions, and lasted less than fifteen minutes. As the operator was drawing away his hand from the vagina, a fold of the small colon protruded into the passage, but was readily restored to its position, to return no more, notwithstanding the efforts and contractions of the animal. Ten days after the operation she resumed her place in her stable and was returned to her work, having lost her irritable and dangerous disposition (and quite reformed in character).—*Revue Veterinaire*.

## SANITARY LEGISLATION.

### ORDER AND REGULATIONS FOR THE INSPECTION OF CATTLE AND SHEEP FOR EXPORT.

U. S. DEPARTMENT OF AGRICULTURE, )  
 OFFICE OF THE SECRETARY, )  
 WASHINGTON, D. C., October 20, 1890. }

The following order and regulations are hereby made for the inspection of neat cattle and sheep for export from the United States to Great Britain and Ireland and the Continent of Europe, by virtue of the authority conferred upon me by Section 10 of the Act of Congress approved August 30, 1890, entitled "An Act providing for the inspection of meats for exportation, prohibiting the importation of adulterated articles of food or drink, and authorizing the President to make proclamation in certain cases, and for other purposes:"

1. The Chief of the Bureau of Animal Industry is hereby directed to cause careful veterinary inspection to be made of all neat cattle and sheep to be exported from the United States to Great Britain and Ireland and the Continent of Europe.
2. This inspection will be made at any of the following

named stock yards:—Kansas City, Mo. ; Chicago, Ill. ; Buffalo, N. Y. ; Pittsburg, Pa. ; and at the following ports of export, viz:—Boston and Charlestown, Mass. ; New York, N. Y. ; Philadelphia, Pa. ; Baltimore, Md. ; and Norfolk and Newport News, Va. All cattle shipped from any of the aforesaid yards must be tagged before being shipped to the ports of export. Cattle arriving at ports of export from other parts of the United States will be tagged at said ports.

3. After inspection at the aforesaid stock-yards, all cattle found free of disease and shown not to have been exposed to the contagion of any contagious disease, will be tagged under the direction of the Veterinary Inspector in charge of the yards. After tagging, the cattle will be loaded into cleaned and disinfected cars, and shipped through from said yards, in said cars, to the port of export.

4. All animals will be re-inspected at the port of export. All railroad companies will be required to furnish for the transportation of cattle and sheep for export, clean and disinfected cars, and the various stock-yards located at the ports of export shall keep separate, clean and disinfected yards for the reception of export animals only.

5. Shippers will notify the Veterinary Inspector in charge of yards, of intended shipments of cattle, and will give to the said Inspector, when possible, the name of the locality from which said animals have been brought, and the name of the feeder of said animals, and such further and other information as may be practicable, for proper identification of the place from which said animals have come.

6. The Inspector, after passing said cattle, and tagging the same, will notify the Veterinary Inspector in charge of the port of export of the inspection of said animals, giving him the tag numbers, and the number and designation of the cars in which said animals are shipped.

6. Export animals, whenever possible, shall be unloaded at the port of export from the cars in which they have been transported directly at the wharves from which they are to be shipped. They shall not be unnecessarily passed over any highway or removed to cars or boats which are used for conveying other animals. Boats transporting said animals

to the ocean steamer must be first cleansed and disinfected under the supervision of the Veterinary Inspector of the port, and the ocean steamer must, before receiving said animals, be thoroughly cleaned or disinfected in accordance with the directions of said Inspector. When passage upon or across the public highway is unavoidable in the transportation of animals from the cars to the boat, it must be under such careful supervision and restrictions as the Veterinary Inspector may, in special cases direct.

8 Any cattle or sheep that are offered for shipment to Great Britain or Ireland, or the Continent of Europe, which have not been inspected and transported in accordance with this order and regulations, will not be allowed to be placed upon any vessel for exportation, as they will be deemed, under the law, to have been exposed to infection so as to be dangerous to other animals.

9. The supervision of the movement of cattle from cars and yards to the ocean steamer at the ports of export will be in charge of the Veterinary Inspector of the port. No ocean steamer will be allowed to receive more cattle or sheep than it can comfortably carry. Over-crowding will not be permitted.

10. The Veterinary Inspector at the port of export will notify the Collector of the Port of the various shipments of cattle or sheep that are entitled to clearance papers, and certificates of the inspection of said animals will be given to the consignors for transmission with the bills of lading.

#### AN ACT

providing for the inspection of meats for exportation, prohibiting the importation of adulterated articles of food or drink, and authorizing the President to make proclamation in certain cases, and for other purposes.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,* That the Secretary of Agriculture may cause to be made a careful inspection of salted pork and bacon intended for exportation, with a view of determining whether the same is wholesome, sound and fit for human food, whenever the laws, regulations, or orders of the government of any foreign country to which such pork or bacon is to be exported shall require inspection



thereof relating to the importation thereof into such country, and also whenever any buyer, seller, or exporter of such meats intended for exportation shall request the inspection thereof.

Such inspection shall be made at the place where such meats are packed or boxed, and each package of such meats so inspected shall bear the marks, stamps, or other device for identification provided for in the last clause of this section: *Provided*, That an inspection of such meats may also be made at the place of exportation if an inspection has not been made at the place of packing, or if, in the opinion of the Secretary of Agriculture, a re-inspection becomes necessary. One copy of any certificate issued by any such inspector shall be filed in the Department of Agriculture; another copy shall be attached to the invoice of each separate shipment of such meat, and a third copy shall be delivered to the consignor or shipper of meat as evidence that packages of salted pork and bacon have been inspected in accordance with the provisions of this act and found to be wholesome, sound, and fit for human food; and for the identification of the same such marks, stamps, or other devices as the Secretary of Agriculture may by regulation prescribe shall be affixed to each of such packages.

Any person who shall forge, counterfeit, or knowingly and wrongfully alter, deface, or destroy any of the marks, stamps, or other devices provided for in this section on any package of any such meats, or who shall forge, counterfeit, or knowingly and wrongfully alter, deface, or destroy any certificate in reference to meats provided for in this section, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding one thousand dollars or imprisonment not exceeding one year, or by both said punishments, in the discretion of the court.

§ 2. That it shall be unlawful to import into the United States any adulterated or unwholesome food or drug or any vinous, spirituous or malt liquors, adulterated or mixed with any poisonous or noxious chemical, drug or other ingredient injurious to health. Any person who shall knowingly import into the United States any such adulterated food or

drug or drink, knowing or having reasons to believe the same to be adulterated, being the owner or the agent of the owner, or the consignor or consignee of the owner, or in privity with them, assisting in such unlawful act, shall be deemed guilty of a misdemeanor, and liable to prosecution therefor in the district court of the United States for the district into which such property is imported; and, on conviction, such person shall be fined in a sum not exceeding one thousand dollars for each separate shipment, and may be imprisoned by the court for a term not exceeding one year, or both, at the discretion of the court.

§ 3. That any article designed for consumption as human food or drink, and any other article of the classes or description mentioned in this act, which shall be imported into the United States contrary to its provisions, shall be forfeited to the United States, and shall be proceeded against under the provisions of chapter eighteen of title thirteen of the Revised Statutes of the United States; and such imported property so declared forfeited may be destroyed or returned to the importer for exportation from the United States after the payment of all costs and expenses, under such regulations as the Secretary of the Treasury may prescribe; and the Secretary of the Treasury may cause such imported articles to be inspected or examined in order to ascertain whether the same have been so unlawfully imported.

§ 4. That whenever the President is satisfied that there is good reason to believe that any importation is being made, or is about to be made, into the United States, from any foreign country, of any article used for human food or drink that is adulterated to an extent dangerous to the health or welfare of the people of the United States, or any of them, he may issue his proclamation suspending the importation of such articles from such country for such period of time as he may think necessary to prevent such importation; and during such period it shall be unlawful to import into the United States from the countries designated in the proclamation of the President any of the articles importation of which is so suspended.

§ 5. That whenever the President shall be satisfied that

unjust discriminations are made by or under the authority of any foreign state against the importation to or sale in such foreign state of any product of the United States, he may direct that such products of such foreign state so discriminating against any product of the United States as he may deem proper shall be excluded from importation to the United States; and in such case he shall make proclamation of his direction in the premises, and therein name the time when such direction against importation shall take effect, and after such date the importation of the articles named in such proclamation shall be unlawful. The President may at any time revoke, modify, terminate, or renew any such direction as, in his opinion, the public interest may require.

§ 6. That the importation of neat cattle, sheep and other ruminants, and swine, which are diseased or infected with any disease, or which shall have been exposed to such infection within sixty days next before their exportation, is hereby prohibited; and any person who shall knowingly violate the foregoing provision shall be deemed guilty of a misdemeanor, and shall, on conviction, be punished by a fine not exceeding five thousand dollars, or by imprisonment not exceeding three years, and any vessel or vehicle used in such unlawful importation with the knowledge of the master or owner of said vessel or vehicle that such importation is diseased or has been exposed to infection as herein described, shall be forfeited to the United States.

§ 7. That the Secretary of Agriculture be, and is hereby, authorized, at the expense of the owner, to place and retain in quarantine all neat cattle, sheep and other ruminants, and all swine, imported into the United States, at such ports as he may designate for such purposes, and under such conditions as he may by regulation prescribe, respectively, for the several classes of animals above described; and for this purpose he may have and maintain possession of all lands, buildings, tools, fixtures, and appurtenances now in use for the quarantine of neat cattle, and hereafter purchase, construct, or rent as may be necessary, and he may appoint veterinary surgeons, inspectors, officers, and employees by him deemed

necessary to maintain such quarantine, and provide for the execution of the other provisions of this act.

§ 8. That the importation of all animals described in this act into any port in the United States, except such as may be designated by the Secretary of Agriculture, with the approval of the Secretary of the Treasury, as quarantine stations, is hereby prohibited; and the Secretary of Agriculture may cause to be slaughtered such of the animals named in this act as may be, under regulations prescribed by him, adjudged to be infected with any contagious disease, or to have been exposed to infection so as to be dangerous to other animals; and that the value of animals so slaughtered as being so exposed to infection but not infected may be ascertained by the agreement of the Secretary of Agriculture and owners thereof, if practicable; otherwise by the appraisal by two persons familiar with the character and value of such property, to be appointed by the Secretary of Agriculture, whose decision, if they agree, shall be final; otherwise the Secretary of Agriculture shall decide between them, and his decision shall be final; and the amount of the value thus ascertained shall be paid to the owner thereof out of the money in the Treasury appropriated for the use of the Bureau of Animal Industry; but no payment shall be made for any animal imported in violation of the provisions of this act. If any animal subject to quarantine according to the provisions of this act are brought into any port of the United States where no quarantine station is established the Collector of such port shall require the same to be conveyed by the vessel on which they are imported or are found to the nearest quarantine station, at the expense of the owner.

§ 9. That whenever, in the opinion of the President, it shall be necessary for the protection of animals in the United States against infectious or contagious diseases, he may, by proclamation, suspend the importation of all or any class of animals for a limited time, and may change, modify, revoke, or renew such proclamation, as the public good may require; and during the time of such suspension the importation of any such animals shall be unlawful.

§ 10. That the Secretary of Agriculture shall cause care-

ful inspection to be made by a suitable officer of all imported animals described in this act, to ascertain whether such animals are infected with contagious diseases or have been exposed to infection so to be dangerous to other animals, which shall then either be placed in quarantine or dealt with according to the regulations of the Secretary of Agriculture; and all food, litter, manure, clothing, utensils, and other appliances that have been so related to such animals on board ship as to be judged liable to convey infection shall be dealt with according to the regulations of the Secretary of Agriculture; and the Secretary of Agriculture may cause inspection to be made of all animals described in this act intended for exportation, and provide for the disinfection of all vessels engaged in the transportation thereof, and of all barges or other vessels used in the conveyance of such animals intended for export to the ocean steamer or other vessels, and of all head-ropes and other appliances used in such exportation, by such orders and regulation as he may prescribe; and if, upon such inspection, any such animal shall be adjudged, under the regulations of the Secretary of Agriculture, to be infected or to have been exposed to infection so as to be dangerous to other animals, they shall not be allowed to be placed upon any vessel for exportation; the expense of all the inspection and disinfection provided for in the section to be borne by the owner of the vessels on which said animals are exported,

Approved August 30, 1890.

## SOCIETY MEETINGS.

### ILLINOIS VETERINARY MEDICAL ASSOCIATION.

#### WEDNESDAY SESSION.

The eighth annual meeting of the Illinois Veterinary Medical Association was held at the Sherman House, Chicago, November 5-6, 1890.

The meeting was called to order at two p. m. on the 5th, President Williams in the chair. The following members were in attendance during the meeting, twelve of whom responded to roll-call: Drs. A. H. Baker, S. S. Baker, J. T. Nattress, Jno. Casewell, Wm. Jinks, J. A. Judson, J. F. Pease, J. F. Reid, J. F. Ryan, J. D. Robinson, J. Stallman, J. S. Spangler, C. E. Sayre, H. Thompson, W. F. Weese, W. L. Williams, S. H. Kingery, and associate member T. D. Hinebauch.

The minutes of the previous meeting were read and approved.

The President's annual address was omitted and the election of officers was proceeded with.

Dr. Williams was nominated for President, to succeed himself, by Dr. Nattress. Dr. Williams earnestly begged to be relieved, after three years of arduous service in this capacity, and nominated Dr. Reid. Dr. Reid took the floor and nominated Dr. S. S. Baker, who in turn nominated Dr. J. F. Pease. The nominations were then closed and a ballot resulted in the election of S. S. Baker as President.

The following Vice-Presidents were then elected, the Secretary casting the ballot of the Association for each: 1st, J. D. Robinson, Canton; 2d, J. F. Reid, Decatur; 3d, J. S. Spangler, Aurora.

J. F. Pease, Quincy, Recording Secretary, and J. T. Nattress, Delavan, Treasurer, were elected to succeed themselves.

Dr. Williams was elected Corresponding Secretary, and Drs. Jno. Casewell, W. F. Weese and S. H. Kingery as the Board of Censors.

The following candidates for membership were proposed and, on motion, were elected by acclamation, viz: M. Wilson, (Royal College), Mendota; N. I. Stringer, Fairbury; Jno. H. Ullrich, (Ontario), Decatur—all proposed by Dr. Williams; J. J. Brougham, (Chicago, '89); S. Rudberg, (Chicago, '89); R. G. Walker, (Chicago, '86), all of Chicago—proposed by Dr. Baker.

Dr. Weese then presented a paper on "Scrofulous Ostitis in Foals,"\* which elicited the following discussion:

Question by Dr. Reid: How do you account for the metastatic nature of this inflammation?

ANS. The micro-organism has a selective affinity for serous membranes.

Dr. Reid: How then do you account for the abscesses in the lungs and liver? I believe it due to infection through the umbilical vein, either after birth or from the mare before birth, the cord having been ruptured. Have examined hundreds of cases, and in all cases have found signs of present or previous inflammation of the umbilical cord.

ANS. No reason why other tissues may not become affected through the blood. Essayist has examined cases where no signs of inflammation of the umbilicus were visible.

Dr. Reid thought this should be called *septic arthritis*.

Dr. Williams agreed with Dr. Reid in the cause of this disease, but preferred the name of *pyro-septæmia*, given by Diekerhoff. If the umbilical vein becomes closed by a firm clot, we have an abscess formed—purely local.

The sequence of inflammatory troubles is as follows: 1st, in the liver; 2nd, in the lungs, then in serous membranes, from thrombosis of the blood vessels. He thought the changes might occur inside of two days. It is not necessary to have an abscess follow the passage of a micro-organism up the vein.

Dr. Williams uses iodoform, oxide zinc, and starch as a powder to the part, and when used early after birth has *never* had a case follow.

He thought some of his earlier cases were rachitis. Is opposed to ligation.

Dr. Reid bathed with bi-chloride solution and injected into the opening.

Dr. Thompson used local antiseptics and salicylates internally with good results.

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\* Published in this issue of the REVIEW.

Dr. J. F. Reid, of Decatur, then read a paper on "Infectious Abortion of Mares,"\* which brought out the following discussion:

Dr. Williams has seen much of this. In some districts it has caused as high as 80 per cent. of loss.

Dr. Hinebauch: Does the abortion of cows affect the mares, and *vice versa*?

Dr. Ullrich: Last season we lost the offspring from all but *two* of *forty* pregnant mares, and got thirty-five calves from thirty-six cows.

Dr. Hinebauch experimented with the fluid from aborted cows, and found thirteen different germs. The experiments were for the State, but the funds running short they have not been completed.

Dr. A. H. Baker divided abortions into three classes. First, from mechanical causes; second, habitual abortion; third, infectious. The latter is septic in its nature; he believed it *might* be specific, but that *any* septic or putrifactive germ may cause infectious abortion. The uterus is in close nervous connection with the rest of the body. A shock to the nerves may produce abortion by interrupting the uterine circulation. Any severe disease may cause abortion.

Dr. Reid: "We are considering infectious abortion. I draw the line between the above cases which are accidental and sporadic, and true infectious abortion. I believe each case of such to *follow* a septic degeneration of the foetal membranes, due to a specific germ which enters through its genital passages."

Dr. Baker believed it might enter through the lungs or the alimentary canal, and a general infection follow with abortion, and putrefaction of membranes as a sequel.

Dr. Reid disagreed again. Such a general infection would be attended with grave constitutional symptoms, while it is a clinical fact that no signs of disease are evident up to the beginning of the act of abortion, yet such cases are not infrequently followed by *metritis*, or even *gangrene* of the uterus in *these* cases.

Dr. Baker thought an accidental or sporadic abortion might occur and be followed by an epizootic of abortion from the putrefaction of the membranes.

Dr. Williams: "In your cases there is a systemic disturbance antedating the abortion. In *these* cases there is a local disturbance in the foetus, causing its death, and then abortion takes place followed by systemic septic disturbances in the mare and possibly death of the same"

Dr. Hinebauch: "I am more than ever convinced that the contagious abortions of mares and cows are distinct and separate diseases."

The discussion was here closed and an adjournment made until Thursday.

#### THURSDAY SESSION.

At 11 A.M. the meeting reconvened, President Baker in the chair.

The order of business was suspended, and the name of Prof. D. McIntosh of the University of Illinois, proposed by Pres. Baker.

On motion of Dr. Williams, the by-laws were suspended, and the ballot cast by the Secretary for Prof. McIntosh.

The report of the Corresponding Secretary was called, but the Secretary being absent no report was made.

The Treasurer made his report, showing a balance of \$32.05 in the treasury.

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\* Published in this issue of the REVIEW.

A bill of \$8.10 for stationery was presented by Dr. Williams and was allowed, being duly audited.

The committee appointed to work for the success of the Western meeting of the U. S. Veterinary Medical Association, reported through their chairman, Dr. Williams. They had made the local arrangements for the meeting in Chicago. They furnished a complete list of graduates in Illinois to the Secretary of the United States Association, and had urged members of this Association to attend and join the National Association. They report the meeting a success, one hundred and nine members being present. The West is recognized in the United States Association.

On motion of Dr. Ryan, the report was accepted and thanks paid the committee.

The amendment to the by-laws, proposed in writing at the previous meeting, duly signed, was taken from the table and read. This amendment changes the order of business so that the new officers are not elected until the old ones have enacted their programme and made their reports.

On motion of Dr. Williams, seconded by Dr. Ryan, the amendment was adopted without a dissenting vote.

On behalf of the AMERICAN VETERINARY REVIEW, Dr. Williams offered to furnish one hundred reprints of the minutes of our Association for the exclusive use of the papers for publication.

Moved by Dr. Pease, seconded by Dr. Stallman, to accept this offer of the REVIEW.

Dr. Robinson moved to amend by giving for one year, two meetings.

The amendment was received and seconded, and was then put and carried.

The motion as amended was then put and carried.

Dr. Robinson moved to reprint the constitution and by-laws; seconded by Dr. Thompson.

Moved by Dr. Williams, seconded by Dr. Pease to amend, by adding "that a committee of three be appointed to report on the expense of the same at the next meeting."

The amendment was then carried.

The motion as amended was then carried.

The chair appointed Drs. Robinson, Pease and Ryan on this committee.

The Standing Committees were then appointed as follows:

*On Programme.*—President Baker and Secretary Pease, *ex-officio*, Dr. Stringer, Dr. Scott and Dr. Hollingsworth.

*On Arrangements.*—Vice-President Robinson, *ex-officio*, chairman, and Drs. Williams and Ryan.

The sense of the meeting was then taken as to the place of the next meeting, and was found to be in favor of Bloomington.

#### AFTERNOON SESSION.

The Association met at 2:15, to listen to a paper on "Parturient Eclampsia in the Mare,"\* by Dr. Williams, which brought forth the following discussion:

Dr. Baker wished a distinction made between the disease and the hysteria

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\*Published in this issue of the REVIEW.



at œstrum. He recounted a case in the mare where the temperature was 111.5° F. Gelsemium and bromide of potash had a curative action.

Dr. Williams denies the existence of hysteria in the lower animals. The disease under consideration was non-febrile.

Prof. McIntosh quoted Leacock on a case called by him hysteria, and described the symptoms.

Dr. Reid described similar symptoms in a gelding.

Dr. Baker limited the term hysteria to the febrile disturbance of œstrum with clonic spasms.

Dr. A. H. Baker then presented the following paper on "Navicular Disease and Neurotomy"\* which brought out an animated discussion.

Dr. Williams at once attacked the essayist on the rheumatic theory. "Why does it not shift around as in ordinary rheumatism? Why does it attack the front feet? and is there any acid condition of the urine?" He considered it pure and simple arthritis, having as its cause a bruising from concussion of the parts.

Dr. Reid concurred in this opinion. "You recommend turning out on soft pasture for improvement; this would be the worst condition for rheumatism."

Dr. Baker referred to his paper for his opinion on the above points.

Dr. Hinebauch: "Putting into *deep* mud would be bad for a sprained tendon. It is the rest obtained by turning out that causes improvement."

He supported the rheumatic theory. Rheumatism is allied to catarrh in its ætiology. Had seen navicular diseases follow catarrhal fever, and cited a case where a post-mortem examination showed the ulcerative processes to be confined to the side of the *navicular bone* next to the *os pedis*.

Dr. Reid claimed these cases to be the exception.

Dr. Hinebauch: "Concussion renders the foot more liable to an attack of rheumatism."

Dr. Pease agreed with the preceding. German authorities hold rheumatism to be kindred to catarrh in causes. In the human subject a sprained tendon is liable to be followed by local rheumatism. Believed a rheumatic tendency to be largely to blame for the appearance and persistency of this disease.

Dr. Williams discredited the existence of rheumatism in the horse.

Dr. Hinebauch cited a post-mortem where the characteristic deposits of rheumatism were visible around a joint.

On motion, the discussion was closed.

Dr. Tait Butler, President of the Iowa Association, was unavoidably absent, and his paper on "Castration of the Horse,"\* was read by Dr. Williams.

The paper was not discussed.

A vote of thanks was tendered the retiring President for the past three years of efficient service, and to the essayists.

Thanks were also voted the proprietor of the Sherman House for the use of a room to meet in.

The Association adjourned to meet in Bloomington at the call of the committee.

J. F. PEASE, *Recording Secretary*.

\*To be published in next issue.

## LONG ISLAND VETERINARY SOCIETY.

The regular meeting of the Long Island Veterinary Society was held on Wednesday evening, Nov. 19, 1890, at No. 75 Adams St., Brooklyn, the President, Dr. Geo. H. Berns, in the chair.

The following members were present: Drs. Geo. H. Berns, Geo. F. Bowers, William H. Pendry, Roscoe R. Bell, Samuel Atchison and D. S. Breslin.

The minutes of the previous meeting were read and approved.

Board of Censors made no report.

The next order of business being reading of papers, Dr. Geo. H. Berns read an interesting paper on "Osteo-porosis"\* which was followed by an interesting discussion by the members, after which a vote of thanks was tendered to the essayist.

The next order of business being the nomination of officers to be elected at the December meeting, the following gentlemen were placed in nomination:

President, Dr. R. R. Bell, Dr. Wm. H. Pendry; Vice-President, Dr. Samuel Atchison; Treasurer, Dr. Geo. F. Bowers; Secretary, Dr. D. S. Breslin.

*Board of Censors:* Dr. Geo. H. Berns, Dr. Philip Newman, Dr. H. Houseman, Dr. Thomas M. Buckley and Dr. J. F. Mustoe.

The Chair appointed Dr. Wm. H. Pendry as essayist for December meeting. The meeting then adjourned.

D. S. BRESLIN, D.V.S,

*Secretary.*

## KANSAS VETERINARY MEDICAL ASSOCIATION.

The Kansas Veterinary Medical Association met at the Copeland, in Topeka, Sept. 18, 1890.

Meeting called to order by President Geo. C. Pritchard.

Minutes of last meeting read and approved.

Election of officers resulted in the election of Geo. C. Pritchard, of Topeka, President; S. L. Hunter, of Ft. Leavenworth, Vice-President; L. R. Brady, of Manhattan, Secretary, and W. H. Richards, of Emporia, Treasurer.

Board of Censors elected were F. W. Cook, of Hutchinson, John Ernst, of Topeka, and S. C. Orr, of Manhattan. New members elected were Drs. Glass, Cook, Sihler and Ernst.

Two papers were read, one by D. C. Ayer, of Leavenworth, a very well prepared article on "Fistula," which was well discussed. The other being an essay on "Azoturia," by Dr. Orr, of Manhattan. This was a very well prepared essay and created quite a lively discussion.

Papers to be read at the next meeting are by Drs. Daniel Lemay, of Fort Riley, S. E. Phillips, of Wichita, and G. W. Cook, of Hutchinson.

Meeting adjourned to semi annual meeting at Wichita, second Thursday in March next.

L. R. BRADY,

*Secretary.*

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\* Paper published in this issue of the REVIEW.

# AMERICAN VETERINARY REVIEW,

JANUARY, 1891.

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## EDITORIAL.

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**ACTINOMYCOSIS IN THE UNITED STATES.**—The cases in the West—discussion in the *Breeders' Gazette*—legal action in the matter—the discussion of the subject probably closed, as merely of home importance—renewal of its importance—possibly of an international nature—Professor Grandeau's so-called discovery—America is full of the disease—our inspection of cattle illusory and inefficacious—the work of the Bureau of Animal Industry almost ignored—Professor Grandeau's error—does it not call for Dr. Salmon's action, and notification abroad of the new regulations of the Department of Agriculture? **KOCH'S CURE FOR TUBERCULOSIS DISEASES.**—Not much more known to-day than at the beginning—scientists still of different opinions—ought not experiments have been made upon cows—Pasteur experimented on dogs for rabies, why not Koch on cows? "**BACTERIOLOGICAL WORLD.**"—A new journal—welcome and good success for it and our friend, Dr. P. Paquin, the worthy editor.

**ACTINOMYCOSIS IN THE UNITED STATES.**—Our readers will remember that in our issue of April last we reported that a number of cases of actinomyces had been detected in one of the large Western cattle gatherings, and that much excitement had been caused by the action of the authorities, by whom the destruction of the entire carcasses of the affected animals had been ordered. This was followed by a long and interesting discussion, in which a number of the veterinarians who had been consulted in the matter participated, and which was published in extenso in the pages of that most excellent agricultural paper, the *Breeders' Gazette*. The subject developed such an amount of interest, and the opinions expressed were so much at variance, that it ought not to be considered

surprising if the public should hear of some legal action instituted by parties who have suffered pecuniarily by the slaughter and destruction of the diseased cattle. We believe indeed, that the law has already been invoked, and that in the words of one of our friends, "it is certain that we shall soon witness one of the most interesting and expensive law suits that has ever been brought before a court of justice." Yet still the cases of actinomycosis of last April may be considered closed, as respects the interests of the general public, and the question may be looked upon as simply one of seeking redress for alleged private pecuniary damage. If however, we take into consideration certain inquiries which have arisen in this vicinity, and also certain statements which we have noticed in some of our exchanges, it seems possible that the Peoria and Chicago actinomycosis cases are not likely to remain a subject of economic importance at home only, but on the contrary, may become the topic of an international diplomatic discussion of a somewhat serious nature, as indicated in a dispatch printed in one of the New York journals. This despatch is from Paris, under date of the 22d of November, and contains the statement that "Professor Grandeau, Governmental Cattle Inspector, claims to have *discovered* a disease of cattle, transmissible to man, which he calls actinomycosis, and which exists principally in America." That Professor Grandeau has seen actinomycosis in France is not surprising, but the affirmation that this disease exists principally in this country strikes us as being a statement which is open to serious objections. Can it be that the gentleman is making haste to take advantage of the notoriety and clamor attendant upon the Peoria and Chicago cases? Possibly—and especially is this impression of ours strengthened by his further remarks that "the inspection of cattle does not exist, *de facto*, in America, and is, to say the least, illusory and inefficacious. Meats imported from this country [the United States] are altogether unwholesome and unfit for food." All this is as easy to say as it is difficult to prove. Though young in its organization and comparatively recent in its experience, our sanitary service is not as bad as Professor Grandeau seems desirous to

represent it. Our inspection of meat may not yet be equally perfect with that of old Europe, yet still, imperfect as it may be, it will not allow meat infected and infested with actinomycosis, or cattle showing sign of the disease, either to be sent abroad or eaten at home. The work of the Bureau of Animal Industry in stamping out pleuro-pneumonia from the United States demonstrates clearly enough that the important American trade in food animals is not to be jeopardized, and that they certainly would not expose it to the application of new restrictions by allowing the exportation of the diseased animals, as referred to by the learned French cattle inspector. It is quite probable that in his anxiety to fulfil his official duties, his patriotic zeal has upset his judgment and he has allowed himself to be carried beyond the limits of strict verity in his statements. Perhaps a quiet reconsideration of the case may cause him to amend his opinion; but yet, again, might it not be a proper thing for our worthy Chief of the Bureau of Animal Industry to do, to endeavor to neutralize any probable evil influence which may follow Professor Grandeau's remarks, by correcting their "inaccuracy," by calling the attention of the various European governments to the new regulations of the Department of Agriculture; to the establishment of our sanitary works, and to the recent creation of official veterinary inspectors for the determination of the condition in respect to health, of exported as well as imported cattle, and of their products?

KOCH'S CURE FOR TUBERCULOUS DISEASES.—Only a few weeks have elapsed since the announcement of the discovery of the great German doctor. Since then the daily press and the scientific journals, principally the medical, have been full of the subject; patients almost without number have already submitted themselves to treatment; the lymph has been distributed, received and tried throughout almost the entire world, and still the results which have been obtained continue to be of the most indefinite character. To-day, as almost on that of the first great announcement, the medical profession seems to be doubtful, or at least divided as to the definite and real value of the "discovery."

We have watched as carefully as we could all that has been published on the subject, and so far our researches have failed to discover anything relating to a part of the experimental process which in our opinion ought to have been followed before the treatment had been allowed to enter into the domain of human therapeutics. We are here referring to experiments upon our domestic animals, and especially upon those which, there is a tendency to believe, are among the most common means of the transmission of the disease. It is true that it was by experiments upon animals that the lymph was discovered, but if only rabbits and guinea-pigs were employed, it was, so to speak, only an experimental tuberculosis; and if apparently good results were obtained with them, would it not have been the dictate of wisdom to test the virtues of the lymph upon the cow, for example, as an animal in which tuberculosis is especially common, and upon which, by post-mortem inspection, after a supposed recovery, the effects of the treatment could have been learned with scarcely a possibility of doubt. We are not informed whether or not such experiments have been made, but we feel confident that they would have produced results quite as satisfactory and valuable as those which have accrued where human beings have been the subjects, and which we fear may be justifiably considered to have cost the lives of those whose death has already been recorded, or who, if not subjected to martyrdom as victims to an incompletely understood treatment, might at least have been saved from a sudden and fatal collapse. The adoption of a comparative therapeutics with Koch's cure would certainly have gained much in professional estimation by this course. The prophylactic application of anti-rabid inoculation of Pasteur did not enter human practice until the great French chemist had fully proved its effects on the animals most subject to rabies. Would it not have been wise for Dr. Koch to have followed the same method?

A NEW MAGAZINE.—The *Bacteriological World* is announced to make its appearance with the beginning of the coming year. Thus January, 1891, will introduce the first member to its friends. The circular which we have received

informs us that its "mission will be the general dissemination of knowledge on the subject of bacteriology in general, and pathological micology in particular."

In view of the interest which American scientists have of late manifested in this important department of medicine, and the important place which at the present time the subject occupies in the etiology, diagnosis and treatment of disease, there can be no doubt that the *Bacteriological World* will receive a cordial welcome at the hands of physicians as well as veterinarians, and especially when it is considered that the editorial work will be placed in the hands of our young friend Dr. P. Paquin, of the State University of Missouri.

The subscription price of the new magazine will be \$3.00 per annum and we are pleased to announce to our readers that by special arrangement, subscribers to the *Bacteriological World* who desire it, will receive also the AMERICAN VETERINARY REVIEW for a joint subscription price of \$5.00 per annum.

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## ORIGINAL ARTICLES.

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### CASTRATION OF THE HORSE.

By DR. TAIT BUTLER, V.S., Davenport, Iowa.

A paper read before the Illinois Veterinary Medical Association.

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I have two reasons for calling your attention to the subject of castration. The first is that, owing to the fact that it is a source of convenience and economic profit to man, it has become so generally practised that veterinarians, in justice to themselves and the public, can no longer continue to deem it an operation beneath their scientific skill and consequently neglect it. The second reason is that, although I have searched diligently, I have been unable to find anything in veterinary literature that at all represents the opinions of American veterinarians and castrators.

As to the literature on the subject in the English language, it is almost wholly unworthy of notice, except, perhaps, in a

few isolated cases, of which the work by Liautard is an example. But even "Animal Castration," by that eminent veterinarian, is in reality little more than a compilation of the opinions and practice of European operators; and although I have a high opinion of its author both as a gentleman and scientific veterinarian, yet justice compels me to admit that it is a work by no means abreast of the times and in many parts indicates a lack of practical experience on the part of its author.

In order to avoid occupying too much of your valuable time, I shall in this paper confine myself to a consideration of castration and its results in the horse.

#### *Castration of the Normal Male Horse.*

Opinions, even of experienced operators, differ in regard to the age of a horse which best fits him to withstand the operation and at the same time yield the best economic results to his owner. In my opinion the light harness horse should be castrated at two years old, in order to aid a development in harmony with his purposes of life. If castrated at an earlier age, lack of neck and shoulder development is the result, while if allowed to carry his testicles longer, a development of the neck disproportionate with that of the other parts takes place, thereby impairing his beauty and economic value.

Keeping in view the same object, namely, the production of an animal best fitted for his purposes in life, the draft horse may be castrated at one or two years old, but preferably at the former age. For, owing to the purposes for which he is used, his value is enhanced by a large body development, and especially is a full development of the hind quarters desirable.

However, in my opinion, the age of the animals is an unimportant factor in the production of the death-rate from this operation. If the operation be properly performed, with anti-septic precautions, the death-rate will be little, if any, larger among animals ten years old than among those of a much younger age. Of course, if an animal be so old that his physical vigor is declining, he will not be so well fitted to withstand any operation, but, other things being equal, the opera-



tion may be performed with almost equal safety at all ages during the full vigor of life. This, I am aware, is not in harmony with the opinions of veterinarians in general, but careful observation and considerable experience has led me to this conclusion.

There is also much diversity of opinion concerning the question as to what time of the year the operation should be performed, but a majority of operators favor the months of April and May. If the subject be in good health this is of minor importance. In fact, the weather is never too hot nor too cold to obtain good results if the animal be properly taken care of for a few days immediately following the operation. My experience would lead me to believe that if any time of the year is objectionable it is during the months of February, March and April, but that I think is due to the fact that at this particular season of the year the vitality of our animals is at its lowest ebb, owing to the inclement nature of our winters.

All the older writers on the subject also attach considerable importance to a so-called process of preparing the animal for the operation. If a horse be in good health he is fit for the operation, and no process of depletion by purging and starving is necessary. If he must be "thrown," it is then best, for obvious reasons, that he be deprived of food and water for a few hours preceding the operation, but if the better method of performing the operation, with the animal upon his feet, is pursued, not even that is necessary. Emasculation of the horse is so universally practised in this country that the method of operating which requires the least possible amount of work on the part of the operator and owner, if it be in strict accord with scientific surgery, is the highest desideratum. Keeping this end in view the first step is to confine the animal in such a manner that the operation may be properly performed with safety to all concerned. Some difference of opinion exists as to the best method of securing this end. Without entering into a discussion of the various methods of throwing and securing horses for this operation, we may state that a large number of operators perform the operation with

the animal standing, and thereby avoid the inconvenience of casting him. I prefer this method for the following reasons: First, because it is much less severe on the horse and materially decreases the danger of doing him permanent injury. That is, it obviates the danger of severe strains (which frequently produce a condition known to the public as "crampy") broken bones and hernia. If hernia does not exist at the time of the operation, it is not nearly so apt to occur, if the animal be allowed to stand, as when he is thrown and secured in such a position as to invite hernia, both by his exertions to free himself and by the peculiar position in which he is tied. Second, because it requires much less labor on the part of the operator and owner, and enables the former to effect the desired results in less time and to better advantage. Of course, if the surgeon be extremely clumsy and possessed of undue fear he should cast his subject, or better still, not operate; but otherwise, the parts upon which he is to operate being in their natural position, he is thereby better enabled to perform the operation according to the teachings of science and practical experience.

Where the value of the standing operation is most apparent is in aged horses. If thrown their great strength and age render it a severe operation for all concerned; while if operated upon in the standing position, they make little or no resistance and therefore the operation is a trivial affair.

The only class of animals that I would throw is light harness colts, one year old. These lie down more frequently than others during the operation and although by this they cannot do themselves nor the operator any harm, it is some annoyance. Occasionally one of any class or of any age may give a little trouble in this manner, but when considered in relation to the advantages of the standing operation on the whole, this drawback is insignificant indeed.

The objections to the standing operation come chiefly from those who have never given it a fair trial. It is argued that if the cord be short the testicle cannot be secured without much difficulty. This is a mistake, as all who have operated with the animal upon his feet know full well that the testicle

can be grasped much more easily than when he is tied in such a manner as to render tense the skin in the external inguinal region. But if the gland can be only felt and not grasped, as is frequently the case in both methods of operating, it can be as readily secured by one method as the other, by making the incision through the skin and dartos and introducing the fingers into the opening of the external inguinal ring. Another objection frequently given against this method of operating is that if hernia occurs, the animal must be thrown. Bearing in mind the rarity of this complication, that as before stated it is not likely to occur, and that if it does, a "suspensory" may be applied and the animal thrown, this fancied objection appears somewhat absurd, especially when it is remembered that even where the animal is thrown hernia is seldom observed until he is allowed to rise.

Having decided upon the standing operation the first step is to secure the animal. To do this he must first be "haltered," if, as is frequently the case in the West, this part of his early education has been neglected. If a rope, arranged with a slip-loop at one end, be thrown over his head and the other end fastened to a post, or held by two assistants, a slight choking is usually sufficient to induce him to allow a halter to be placed on his head and a "ring-twitch" \* on his upper lip. When the twitch has been twisted sufficiently tight the "tie-strap" is to be passed through the ring and the head secured to the manger, or a post, or held by an assistant. If the right side of the animal can be placed against some firm object, it will be found advantageous, but it is not essential.

The animal now being secured, the scrotum and contiguous parts should be well washed with a sublimate solution—1 to 500 or 1000—and special care taken that the hands of the operator and all instruments to be used are rendered thoroughly aseptic by washing in a similar solution.

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\* A ring-twitch, as you are probably already aware, consists of an iron ring about five inches in diameter, in which is tied a rope of sufficient length to encircle the upper lip. Its advantages are that it can be conveniently carried in an ordinary operating case and that if, when adjusted, the tie-strap on the halter be passed through it, an unruly horse can be examined and even minor operations performed without an assistant.

On approaching the animal for the operation, the surgeon should place his left shoulder against the left side of his patient, and with his left hand grasp the testicle which is drawn the closer to the body, when with a scalpel, held in the right hand, he may expose it by cutting through the enveloping membranes with one firm, quick, and free movement from before backwards. The testicle having been exposed, the next step is its removal. This may be, and in fact is, done in many ways, *but to my mind only two are worthy of approval.*

One is to remove it with an ecraseur and the other to ligate the cord and remove it with a knife. I prefer the former method because, all things considered, it is of greater practical utility. That is, if the more surgical method of ligating the cord has the advantage from a scientific standpoint, that is more than counterbalanced by the greater convenience of the ecraseur. The question is, does the advantage, if any, possessed by the ligature, justify the extra amount of work required? In my opinion it does not, but we shall nevertheless briefly consider the *modus operandi* of both methods.

To remove the testicle with the ecraseur, pass the fingers of the left hand through the loop formed by the chain and grasping the testicle draw it gently down and apply the chain sufficiently high on the cord to *include in the part removed a small portion of the tunica vaginalis reflexa at the frenum.* This is to remove the small pocket formed by the loose portion of this membrane retracting and slightly folding upon itself owing to the adhesions at the posterior part of the cord. The chain being properly adjusted, the testicle may be removed by slow interrupted turns of the ecraseur screw. The testicle having been removed I enlarge the incision in the scrotum, making it from three to five inches in length according to the size of the testicle removed. I then by means of an insufflator, thoroughly disinfect the cavity with the "pulvis iodoformi dilutus" of the National Formulary. This completes the operation and for after-treatment I recommend only good care and plenty of gentle exercise after the first twenty-four hours.

Two methods of ligating the cord will be briefly described. One is adapted to the standing operation and has to a limited

extant been practised by myself with good results, while the other is the method described by Frick in an article on "Castration under Antiseptic Precautions," in the *Journal of Veterinary Medicine and Comparative Pathology* (Deutschc) with certain suggested improvements by Dr. W. L. Williams, of Bloomington, Ill.

To ligate the cord with the animal standing, the testicle is grasped with the left hand and with a needle in the right a catgut ligature passed through the cord immediately posterior to the spermatic artery and close up to the cut edges of the tunica vaginalis reflexa. The ligature is then tied around the anterior portion of the cord sufficiently tight to compress the spermatic artery, but not necessarily tight enough to cause necrosis of that part of the cord inclosed. There being no danger of the ligature slipping, the cord may be cut through close up to it and the testicle thus removed. The same after-treatment is pursued as when the testicle has been removed with the ecraseur.

Another method of operating, which can only be pursued with the animal in a recumbent position, will be given as described by Frick, with those modifications which to my mind seem desirable.

The scrotum and surrounding parts are thoroughly washed and disinfected. The testicle is exposed, with as small an incision in the enveloping membranes as possible, and immediately douched with a sublimate solution—1 to 1000 or 2000. Frick then applies a silk ligature around a portion of the cord in a very bungling manner, but it is suggested that a carbolized catgut ligature be applied around the whole cord well above the epididymis and the testicle removed with a knife or pair of scissors. He then thoroughly washes the scrotal wound with the sublimate solution, which I would suggest might with advantage be supplimented by a thorough dusting with iodoform. The wound is then closed with silk sutures, as used by Frick, or preferably with catgut as suggested by Williams, in such a manner as to include the tunica vaginalis reflexa. As after-treatment he recommends as nearly perfect quietude as possible, and it appears to me that if the

desired end, healing by first intention, is to be obtained, this is essential. However, in veterinary practice wounds can seldom be got to heal by first intention, owing to the difficulty in keeping the injured parts sufficiently quiet. Therefore it seems to me that, although this method is strictly correct from a theoretical standpoint, it is not calculated to give good results in general practice. Yet, Frick says that he obtained primary union on both sides in seven out of twelve cases, and that out of the twenty-four wounds sixteen, or two-thirds, healed by first intention. Moreover, Bayer reports that in fifteen cases of antiseptic castration, ten out of the thirty wounds healed by first intention; but even that is undoubtedly a higher per centage of primary unions than could be obtained under the conditions of environment met with by the general practitioner in this country. Although, as before stated, I have had no experience with this method of operating, I believe it very likely to be followed by abscess of the scrotum and champignon.

#### *Castration of Cryptorchids.*

Ectopiæ of the testicles may be divided into two classes—inguinal or false cryptorchidism (flankers) and abdominal or true cryptorchidism (ridglings or originals). The former indicates that the testicle is lodged somewhere in the inguinal canal and the latter that it is in the abdominal cavity.

The castration of abdominal cryptorchids has long been a subject of grave importance to veterinarians, but we may search in vain the whole field of veterinary literature for a description of the operation that would be of the least value to the young surgeon. In fact, if he were to follow the directions of such eminent authors as Hertwig, Hering, Vogel, Stockfleth, Degive, Schmidt, Ostertag, Putz, Jacoulet, Fleming and Liautard, he would not operate at all, or worse still, operate with fatal results. The practical surgeon who follows the American or Miles method of operating, is not, after reading a description of Degive's method as given by Liautard in "Animal Castration," surprised that he lost thirty per cent. of those operated upon. The wonder is that he did not lose a

large percentage. Fleming, in an article published in the *Veterinary Journal*, March, 1881, tells us of the great success of Degive, and asserts that his loss was less than ten per cent. However, H. Putz, of the University at Halle, in writing of the operation, tells us that Vogel, of Stuttgart, as late as 1885, relates the experience of Degive and Stockfleth and says they record a loss of thirty per cent.

As an illustration of the worthless nature of the literature on this subject in the English language, I shall quote a few passages from the above-mentioned article by Fleming. On page 163, Vol. 12, of the *Veterinary Journal*, he says: "The external opening is, of course, constituted by the inguinal ring, but the internal or abdominal must not correspond to the internal ring; as if it does, Degive assures us, hernia of the intestine is almost certain to follow. The superior or internal opening should therefore be made through the peritoneum, at one side and in the vicinity of the sub-lumbar region, in front of the external iliac artery, and on the surface and near the posterior extremity of the small psoas muscle." "At one side" of what? "In the vicinity of the sub-lumbar region"—very definite indeed! "In front of the external iliac artery"—could the opening be easily made behind it? "On the surface and near the posterior extremity of the small psoas muscles"—certainly beyond the comprehension of an anatomist of other than the Fleming school. After reading such a description, this portion of the operation must, of course, be perfectly clear to all! But, on the very next page (164) in describing the method of Degive, which he asserts is the best and productive of good results, Fleming says, "The fingers gathered into a cone shape, are introduced into the external inguinal ring and pushed slowly and steadily in a rotary manner in the direction of the canal or external angle of the hip, pressing lightly on the crural arch. In this way a passage is at first made through the internal inguinal ring, then through the space succeeding it, and finally reaches the peritoneum. \* \* \*" You will readily observe the inconsistency. On page 163 he says that "*the internal or abdominal (opening) must not correspond to the internal ring;*" while

on page 164 he says, "*a passage is at first made through the internal inguinal ring. \* \* \**" I might continue in the same line but to no purpose, as the same cloud of inaccuracy and ambiguity surrounds this special field of veterinary literature from the earliest to the present time.

M. Jacoulet's article in the AMERICAN VETERINARY REVIEW, (Vol. 9), on "Castration of Cryptorchids," is probably the best description of the European method of operating in the English language, but it is only the Degive method explained in a more acceptable and intelligible manner. It possesses, however, the cardinal defect of all others, namely, of making out of a comparatively simple and easy operation, a very complicated, difficult and dangerous one, and if, by such a method, Degive and a few others have been successful in a fair percentage of their operations, the fact is undoubtedly due to their manual dexterity, rather than to any merit possessed by the absurd method pursued.

Having failed to find a description of the operation which to my mind is worthy of approval, either from the standpoint of scientific surgery or actual experience, or that represents the opinions of American operators, I shall as briefly as possible describe the method pursued by myself. I make no claim of originality for my method of operating, for, although I have never had an operator who possessed an accurate knowledge of surgery and anatomy describe to me his method of operating, still from personal observations I am convinced it is practically the method pursued by all successful American operators.

The operation should not be performed on animals less than two years old; for, although by exercising care, it may with safety be performed at a much younger age, still owing to the slightly increased danger, and the fact that the testicle may yet descend, I never operate before that age. However, if the testicle is still in the abdominal cavity when the colt is one year old, it will in all probability remain there, but if it has already descended into the canal it may, by the time he is two years old, have descended as far down as the external inguinal ring or even into the scrotum.



The only conditions essential to the fitness of an animal for the operation are, that he be in good health and deprived of food and water for twenty-four hours immediately preceding the operation. Medicinal treatment of an animal in good health, in order to better enable him to withstand the effects of an operation, is not in accord with the surgical science of our day. The point is to have the animal in good health and then to avoid the introduction of septic material into his system.

The operator need not concern himself about the questions, whether his subject be an abdominal or inguinal cryptorchid, or whether the ectopiæ of the testicle be on the right or left, or both sides, until he has him thrown and securely tied, numerous so-called authorities to the contrary notwithstanding. All the difference between the operations for inguinal and abdominal cryptorchidism, is that the latter extends beyond the former to the extent necessary to enter the abdominal cavity and secure the testicle. The method of procedure in the former is, as far as it goes, identical with that in the latter, and hence it is obvious that a knowledge of the exact condition present comes as soon as required.

If the side on which the cryptorchidy exists cannot be determined by the absence of a cicatrix, a careful manipulation of the parts will generally afford the desired information. The atrophied cord can almost always be felt where a testicle has been removed, but such is not always the case. At least, the evidence of an atrophied cord may not be sufficiently conclusive to justify an operator in forming an opinion, especially if it be in direct opposition to that of the owner or attendant, who has, perhaps, seen the normally situated testicle removed. However, owners and attendants are so liable to be mistaken in regard to this matter, that their opinions are of little value. Therefore, an operator should never hesitate to cut into a horse on the opposite side to the one designated by the owner or attendant, if on the side thus designated an atrophied cord can be felt with any degree of certainty. If by no other means a conclusion can be reached, an examination per rectum may shed some light upon the subject; but

if this be done by the operator, he must be especially careful to thoroughly wash and disinfect his hands before proceeding with the operation.

The first step is to cast and secure the animal in such a position as to facilitate the various movements necessary to complete the operation. Without describing the various methods of casting and securing animals for this operation, we may simply call your attention to the importance of tying them in such a manner as will flex well the stifle and hock, and bring the fetlock as close to the former as possible, thereby spreading the thighs and leaving the inguinal regions free from the pressure naturally exerted upon them. This may be done without the "spreader" which, if not harmful, is certainly useless.

After having secured the animal in the proper manner, washed the parts thoroughly in a sublimate solution, and determined the side on which the ectopiæ of the testicle exists, the operator may proceed to place his patient in that position necessary for the operation. The most convenient position is, perhaps, on the opposite side to the one on which the ectopiæ exists. Then, if an assistant by grasping the hock of the upper leg pulls the animal partially, but not completely on his back, and holds him there, the best possible position has been secured.

The first step in the operation proper is to make an incision in the skin and dartos. By many writers even this simple act is made to appear difficult, and to require not only a special instrument, but also great dexterity on the part of the operator in order to avoid wounding the large divisions of the external pudic veins. All this is rank nonsense, as no special care need be taken, and certainly no other instrument than an ordinary scalpel is required. The external pudic veins run immediately under the skin and close to the median line, while the proper place for the incision is at least two and a half or three inches from this line, where no danger nor difficulty can be encountered.

The exact place for the incision may be obtained by drawing a line from a point immediately over the internal inguinal

ring to where the testicle would normally be situated, and then intersecting it by another, about five or six inches in length, drawn parallel to the median line, but about three inches from it. If this second line be drawn so that two-thirds of it is anterior to the first it will exactly represent the proper place for the incision.

If the foregoing directions be followed, no hemorrhage nor other difficulty need occur and all that becomes necessary is for the operator to place himself behind his subject, and with the first finger and thumb of his left hand render tense the skin, while with an ordinary scapel in his right hand he makes a free incision through the skin and dartos.

With the skin and dartos thus divided, the region of the external inguinal ring may be explored and the testicle felt if in that locality. To do this it is not necessary to extensively lacerate the loose cellular tissue in that region, as the testicle, if there, may be felt through it. If the testicle cannot be felt in the vicinity of the external inguinal ring, the skin and dartos are to be raised with one hand, and with the fingers of the other the connective tissue lacerated in the direction of the internal inguinal ring, or in other words, in the direction of the external angle of the ilium and over the tract of the inguinal canal. As the operator proceeds with this process he can, his fingers being beneath the skin and dartos, readily detect the testicle through the other tissues, no matter in what portion of the canal it may be located, and it is, therefore, absurd for him to force his hand into the external inguinal ring and inguinal canal, and thereby entail upon himself much work and great responsibility. If when the region of the internal inguinal ring is reached, the testicle cannot be felt anywhere in the canal, the case is one of abdominal cryptorchidism, and the abdomen must be entered to procure the testicle; but if, on the other hand, the testicle can be felt, the case is one of inguinal cryptorchidism, and the operation is thereby reduced to one of much less gravity.

To procure the testicle, when in the canal, the operator with his index finger penetrates the tissues directly over it until the surface of the vaginal sheath is felt. The opening

thus made may then be enlarged by the introduction of two fingers. To lacerate the tunica vaginalis reflexa it is generally necessary to introduce a scalpel and nick the membrane, when the opening may be enlarged with the fingers and the testicle secured without difficulty. The completion of the operation may be effected as in ordinary castration and, therefore, no further description is necessary. If after passing the fingers up under the dartos as far as the internal ring and carefully manipulating the tract of the canal, the testicle is not discovered, the operator must continue the process of breaking down the loose cellular tissue in the direction of the external angle of the ilium until a point about an inch and a half superior to the internal inguinal ring has been reached. When this has been done sufficiently to allow the hand to pass freely into the artificial channel thus formed the next step is to enter the abdominal cavity. This should be done at a point superior to but in the vicinity of the internal inguinal ring. If the opening be made even through the muscular and other tissue directly superior to the inguinal ring the operation may be completed with ease and safety; but the preferable point at which to enter the abdominal cavity is about an inch, or an inch and a half, above and behind the internal inguinal ring. Or, in other words, behind Poupart's ligament and between it and the ilium, but superior to the inguinal ring. If when the ligament is felt the index finger be passed over it and then turned downwards the cavity may be entered with ease. Moreover, if a point an inch superior to one on a level with the internal inguinal ring be selected the finger enters the abdominal cavity on the line of descent of the testicle and above the crural vessels, thereby combining the greatest possible convenience and safety.

After the index finger of the hand corresponding to the side on which the ectopiæ of the testicle exists has been forced into the abdominal cavity, the next finger may be pressed down alongside of it so as to slightly enlarge the opening. If the opening has been made where above directed, in no case will it be necessary to introduce the whole hand into the abdominal cavity unless the testicle has remained in its primary

location above the peritoneum, which, if it occurs at all, is very rare indeed. At least, in ninety-nine out of every hundred cases, sufficient of the cavity can be explored, simply by the introduction of two fingers, to secure the testicle or some of its appendages. It may, however, be mentioned that the extent of cavity that can thus be explored is greatly increased by pressing downward, with the disengaged hand, the abdominal wall in the vicinity. Therefore, no exact rule can be laid down as to the exact time when it is permissible for the operator to introduce his whole hand into the abdominal cavity. If there be no probability of a mistake in regard to the side on which the cryptorchidy exists and he has sought in vain, for at least an hour, he may perhaps with propriety pass his hand into the abdominal cavity; but, while I have done this on more than one occasion, still I am confident that I never operated upon a case where a little more patience and perseverance, without such introduction of the hand, would not have secured the testicle with greater safety to the animal.

No description of the method of procedure in searching for the testicle would be of value to the inexperienced operator. If he has sufficient practical knowledge of the anatomy of the parts within his reach to recognize each organ as his fingers came in contact with it all that is usually necessary to complete the operation is patient perseverance. If, however, the precaution of depriving the animal of food and water for twenty-four hours immediately preceding has been neglected some difficulty may be experienced in finding the gland, and if the operator be not a practical anatomist he may also experience some difficulty in distinguishing certain parts of the cord and vas deferens even when within his grasp. He may, however, usually expect to find within easy reach either the testicle, epididymis or vas deferens, but if the first two cannot be felt the last may usually be secured, as it passes along the side of the bladder, by compressing the abdominal wall, as above directed, so as to bring that organ within easy reach of the fingers. Owing to the location of the opening into the abdominal cavity the epididymis or vas deferens is usually secured before the testicle, but this serves the operator's pur-

pose well, as in that way he can withdraw his fingers with the epididymis or vas deferens, as the case may be, and then by gentle traction the soft testicle may usually be removed without enlarging the opening. When the testicle has been exposed the ecraseur is the best instrument for its removal. There is another condition occasionally met with which may give some trouble to those who operate according to the above method. It is where the testicle is still in the abdominal cavity but a portion of the cord has passed through the internal inguinal ring into the canal.

If when breaking down the loose tissue in the direction of the internal inguinal ring the cord, or, as is usually the case, a portion of the epididymis, be felt in the canal it is easily distinguished even from a very small testicle and then the operator may choose between two methods of procedure. One is to go directly down upon the loop of the cord and run the risk of being compelled to dilate the internal ring, by the use of the probe-pointed bistoury, in order to remove the testicle through it; while the other is to enter the abdominal cavity close to the ring and by grasping the testicle pull the loop of the cord out of the canal. If there be no adhesions, and they are rare, I prefer the latter method as requiring less work and possessing greater safety.

The wound should be kept thoroughly aseptic by frequent irrigation with a sublimate solution—1 to 1000—during the operation, and in no case should oil be used to lubricate the hand, because it is neither conducive to cleanliness nor necessary. The natural moisture of the tissues and the sublimate solution are all the lubricants needed and possess the advantage of leaving the wound clean and free from all septic material. If proper antiseptic precautions have been observed that portion of the wound near the opening through the abdominal wall will heal very readily and without suppuration. The wound in the skin and dartos should be left open and thoroughly dusted with iodoform. A daily repetition of this, with plenty of gentle exercise after the first twenty-four hours, and good care, constitutes all necessary after-treatment. It is good practice, however, upon allowing the animal to rise to

inject hypodermically about three grains of sulphate of morphia to insure greater quietude and increased comfort on the part of the patient.

By this method hernia, that frequent sequel of the operation when performed by the Degive method, is entirely avoided if but two fingers be introduced into the abdominal cavity, but even though the whole hand be introduced into the cavity, the location of the opening, together with the action of the skin, especially after slight swelling has taken place, renders this complication quite improbable. Moreover, the careful surgeon who operates under thorough antiseptic precautions will by this method reduce his death-rate even in abdominal cryptorchids, to less than five per cent. I have operated repeatedly by both methods and the difference has usually been that between complete success and complete failure.

#### *Castration with Inguinal or Scrotal Hernia.*

By many veterinarians castration with the above complications is thought impossible without the use of the clamps. This is a mistake, for not only can the clamps be dispensed with, but their use is also neither in accord with scientific surgery nor practical experience.

There is only one proper method of operating for inguinal or scrotal hernia and by it the animal may be castrated, or not, to suit the convenience of the owner.

Castration with clamping of the vaginal sheath at the external inguinal ring, as generally practiced, while usually successful is neither surgical, scientific, nor secure. But if this method must be pursued a cat-gut ligature properly applied is far superior to the clamps, no matter from what point of view it be considered.

To apply the ligature proceed as in the ordinary covered operation by reducing the hernia, the various methods for which it is not necessary to here consider, and dissecting the vaginal sheath, with the testicle inclosed, from its outward adhesions until the external ring is reached. Then draw the sheath closely around the anterior border of the cord and with a needle pass a double carbolized catgut ligature through

the sheath immediately anterior to the spermatic cord. The ligature around the anterior portion should be drawn moderately tight but the one which incloses the cord should not be tied tight enough to cause necrosis of the part enclosed. This done the testicle may be removed with the ecraseur within half an inch of the ligature. If a suspensory be applied, which is not necessary, it need not be left on for more than twenty-four hours. By this method protrusion of the intestine is as effectually prevented and moreover, there is no clamp or other foreign substance to impede the immediate healing of the wound. The operation for inguinal and scrotal hernia which at the same time combines the two important factors of success, security and simplicity, and also obviates the necessity of emasculation, is certainly the highest desideratum. The operation which does this must close the vaginal sheath at the internal inguinal ring, as by that alone can the descent of the bowel be effectually prevented with any degree of certainty. Stanley's operation, as given in Williams' "Principles and Practice of Veterinary Surgery," is, as far as it goes, the method which I propose to describe, but he does not complete the operation so as to effectually prevent a recurrence of the lesion, which is perhaps the chief advantage possessed by this method of operating. Whether the operation be for scrotal or inguinal hernia, strangulated or otherwise, it is exactly the same.

The animal should be thrown and secured as for ridgling castration, and placed upon his back with his hind quarters well elevated. If the hernia is not strangulated it may be readily reduced before any incision is made, and even in some cases of strangulated hernia the same may be true; but if the hernia cannot be easily reduced the surgeon should cut directly down upon the inguinal canal at (or an inch below) the internal inguinal ring. The incision may be made longitudinally, or over the course of the inguinal canal, but the latter is preferable if care be taken not to extend the incision sufficiently near to the median line to wound the posterior abdominal or epigastric vein. It should, however, be sufficiently large to enable the surgeon to work without inconvenience, but need only extend



deep enough to divide the skin and the abdominal tunic, as the other tissues beneath may be divided with the fingers. No incision need usually be made in the vaginal sheath, but when it is reached the index finger should be passed down alongside of it into the internal inguinal ring. If a probe-pointed bistoury be now passed down along with the finger, the ring may be incised sufficient to render easy the reduction of the hernia by taxis. The nick in the ring should extend outward and forward so as to avoid wounding the posterior abdominal artery.

When the hernia has been reduced, the vaginal sheath should be grasped with the fingers, or a pair of forceps, and a catgut ligature passed through it close to the spermatic cord by means of a curved needle. If this ligature be then tied sufficiently tight to cause adhesion of the inner surfaces of the sheath, a recurrence of the lesion will be effectually prevented for all time. If the hernia has been reduced before any incision was made, it will only be necessary to secure the vaginal sheath and ligate it as above indicated. The wound may be closed by sutures, and under antiseptic precautions will heal readily.

This operation, besides being neither difficult nor likely to be followed by serious results, is the only one that gives positive assurance of permanent success. Moreover, by it the testicles may be saved, which, in highly-bred animals, is often an important consideration.

Stauley claims that no ligating of the vaginal sheath is necessary, but actual experience has proved that without it a return of the hernia may occur within ten minutes after the completion of his operation.

I have not the time to even briefly consider all the results of castration, but I cannot refrain from calling your attention to the etiology of scirrhus cord and fistula and abscess of the scrotum.

Writers on this subject have been wont to accept the old, erroneous theories in regard to the causes of these conditions, and, consequently, it was left for a progressive young practitioner to first call the attention of the profession to the true cause of champignon and abscess of the scrotum as sequels of castration. But when the cause of these results, so much to be

dreaded by the operator, was clearly pointed out, and actually demonstrated by numerous careful experiments, in an article submitted in competition for the United States Veterinary Medical Association and AMERICAN VETERINARY REVIEW prizes, by Dr. John Wende (Trianon), of Buffalo, N. Y., it was rejected by those so-called representatives of the profession as unworthy of consideration. This does not seem so strange if we consider that in other branches of science important discoveries have at first been too often treated with contempt by the generally accepted intellectual leaders. But in this case, although the majority of practical surgeons have been quick to recognise the importance of Dr. Wende's discovery, these two snails in progress have never seen fit to make amends for the injustice done this progressive young surgeon and the profession at large, and to place themselves in the van of scientific progress, by recognizing, in a public manner, the true worth of this discovery.

In conclusion, I will say that numerous carefully conducted experiments have convinced me that if a large incision be made in the skin and dartos, proper antiseptic precautions observed, and the cord severed by the ecraseur as directed by Dr. Wende, or as described in another part of this paper, scirrhus cord, and fistula and abscess of the scrotum, if not entirely prevented, will be rendered extremely rare. However, for the true cause of these undesirable results of castration, and an effectual method of preventing them, I would refer you to the above-mentioned article in Vol. ix, page 250, of the AMERICAN VETERINARY REVIEW.

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### A NEW PARASITIC DISEASE OF CATTLE.\*

From C. O. JENSEN, Copenhagen, *Monthly Journal of Veterinary Medicine*, Vol. ii., No. 1.

Translated by RICHARD MIDDLETON, A.B., D.V.S., Stuttgart, Germany.

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In the course of the last year it has become known that a whole series of veterinary diseases have been induced by small bacteria of ovoid form and strikingly similar appearance.

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\* The title of this article is our own, Dr. Middleton having omitted to give us the translation of the title of the original.—EDIT.)

Chicken cholera and rabbit septicæmia have long been known to owe their origin to such an organism. Kitt has explained the ætiology of cattle-plague; Oreste and Armanni have made public interesting investigations upon an extended buffalo disease in Italy; Löffler and Schütz have described a swine septicæmia and pneumonia, under the title "swine epidemic"; and lastly, Poels has written upon a septic-pleuropneumonia of calves. All of these diseases were ascribed to stationary bacteria which were exceedingly similar in their morphological, biological, and to some degree their pathogenic characteristics; it is therefore maintained by Hüppe and others that they are only physiological varieties of a single species, which is geographically widely spread.

I am prepared to add still one disease of calves, which is in many particulars interesting. At the end of January, 1888, there suddenly appeared upon a farm in Jütland, containing some 200 head of cattle, a malignant affection which attacked only the young animals; within a few days sixteen calves about two months old died, in from twelve to twenty-four hours after becoming sick. They showed high fever ( $105.8^{\circ}$ ) and diarrhœa; upon post-mortem the blood was coagulated and of a dark red color; a recent and extensive fibrinous pleuritis associated with pericarditis and ecchymotic spots under the pericardium; a well marked gastro-enteritis. Some did not show such extensive alterations as others. With one individual the course seemed chronic; on the under surface of the neck there developed a medium hard, painful, œdamatous and more or less warm swelling. Veterinarian Christman was unable to place a diagnosis upon these patients, which he was treating, and therefore sent me a blood coagulum with a portion of the spleen to examine; he inquired if he had not to do with anthrax. No anthrax bacilli were present; on the contrary there were a few of the ordinary round-ended cadaver bacilli, together with a quantity of very small bacteria which took a watery gentian-violet stain more intensely at their poles than in the middle.

Two mice were inoculated with small pieces of spleen, and both died within thirty to thirty-six hours; upon section the

blood appeared dark and coagulated, spleen hyperæmic and swollen; in the blood contained in the heart an immense number of long oval bacteria were detected; these were, however, larger than those found in the spleens of the deceased calves, but responded to the stain in the same manner. Two rabbits which were inoculated with the blood and spleens of these mice died twelve to eighteen hours after; in the heart blood, and equally distributed in the vessels of the various organs, innumerable bacteria were found. Both showed severe hemorrhagic tracheitis; a pale and swollen spleen; the other abdominal organs, beyond being injected, were normal; the blood densely coagulated. From the blood and organs of the rabbits and mice, gelatine and agar-gelatine cultures were made.

The calves were removed to another portion of the farm and their food changed; the result was, that the affliction entirely disappeared; there were in all twenty-two deaths.

Not many days later the same colleague sent me the spleens of two calves that had died on another farm on which, in the course of a few days, five had succumbed; only two post-mortems were held, but these showed large areas of injected pleura, pericardium and peritoneum; echymoses upon the surface of, and parenchymatous degeneration of the heart.

In both spleens the ovoid bacteria could be observed in large quantities; from this we concluded that in all probability we had to do with the same affection as upon the first farm. Later I received microscopical preparations from the spleen of a one-year-old calf that was found dead in the stall and which had previously shown no signs of disease. By dissection of the same my colleague had found portions which were apparently anthracoid; the blood was dark and not firmly coagulated; spleen very large, dark and soft; extensive ecchymoses upon the peri and endocardium, with numerous hemorrhages superficially situated upon the abdominal organs. In this case the small ovoid bacteria were also found and obtained pure by inoculating mice, and through gelatine cultures.

The quarters and food of these calves, upon the second

farm, were also changed with the same effect as upon the first farm; in all ten calves and one heifer died.

In January, 1889, the same disease appeared on a third farm in the vicinity of Jütland, causing the death of fifteen calves, the majority of which succumbed after but one day's illness. They were suddenly attacked, could not stand, and took no food or water; dyspnoea appeared and the afflicted died in a few hours. Post-mortem revealed an œdematous infiltration of the pharyngeal and laryngeal cavities; enlarged spleen and altered blood, and in some a phlegmonous inflammation in the posterior portion of the buccal cavity. In one calf was found an abscess upon the inside of the left cheek with phlegmonous infiltration of the adjacent tissue. Veterinarian Meyer, who had given me the foregoing history of his cases, also sent me a few portions from the organs. I found the ovoid bacteria in all of these specimens; further, two rabbits which had been inoculated therefrom, died in ten or twelve hours under the usual symptoms. One of the sick calves upon this farm was removed to another and so the disease was transported to the fourth farm, on which ten calves died.

White and ordinary mice died in twenty-four to forty-eight hours after inoculation; after death examination showed swollen spleen with dark blood and many large, but nevertheless characteristic ovoid bacteria. Rabbits died after twelve to twenty-four hours as a rule, but often after ten or twelve hours under symptoms of acute septicæmia; post-mortem examinations always showed a hemorrhagic inflammation of the trachea, with usually an enlarged spleen and a hyperæmic condition of the kidneys, liver and intestines; in the blood and spleen the same ovoid organisms occurred in surprising quantities; these were so numerous in some cases, as to occlude the larger capillaries of the mesentery.

On the 25th of January, 1888, a dog was injected upon the lateral portion of the neck, with one-half ccm. of bouillon culture of the calf plague (the fifth consecutive culture from the spleen of a calf); during the subsequent few days the animal became feverish, and at the point of injection there appeared

a phlegmonous infiltration the size of a hen's egg; this patient recovered in a short time. With the same result were those dogs inoculated with *chicken cholera* cultivations.

At the same time and with the same material, a foal was injected; after some time there developed a large painful and warm swelling of the skin and subcutis of the whole lateral surface of the neck; in a few days this disappeared and the filly remained sound.

Two pigs, respectively three and four months old, on the contrary, were less able to withstand the effect; one of these was inoculated on the 17th of March upon the flat of the thigh, with a drop of blood from the heart of an infected rabbit (the latter inoculated from calf's spleen); the next day I observed a diffuse, bluish-red, œdematous swelling at the injection point and this was accompanied by fever and lassitude. On the second day the swelling extended anteriorly along the abdomen and inside of the limbs; this was characterized by a dark, cyanotic, erysipelatous appearance. The subject lay quiet and slept, but ate nothing. After some days the general condition was improved, the œdema had disappeared and in its stead two hard swellings five inches in diameter appeared; on the twelfth day fluctuation could be felt. Following the incision a quantity of whitish pus escaped, containing necrotic debris of connective tissue and muscle. The ovoid bacteria were found in the contents, but not in so large quantities; a mouse was inoculated with portions thereof, and died in three days; at the examination the characteristic pathological alterations were present. The other pig became affected in precisely the same manner, and showed the same cadaveric changes. A third pig was fed with the intestines of an infected rabbit, but with negative results.

On the 6th of July a rabbit was injected with an agar culture (17th generation from spleen of calf) and the next morning was dead; a few drops of the heart-blood of the same was mixed with 6 ccm. of sterilized water, and injected into the neck of a bull calf four to five weeks old. Immediately after the temperature stood 101.3° F.; on the 8th at nine o'clock, about fourteen hours after, the temperature was 103.8°, pulse 82 and

scarcely perceptible. The patient assumed the decubital position and was very stupid; it could not of itself stand upon the feet. Upon the right side of the neck I perceived a warm, doughy, painful enlargement about 3.5 centimeters long and four broad; upon this spot the cutis was hyperæmic. Case took neither food nor water; in the afternoon at four o'clock, with temperature  $103.1^{\circ}$ , the calf lay as if dead, and the following morning was found dead in the stall.

At the time of post-mortem rigor mortis had already occurred; the subcutaneous tissue upon the right side of the neck was infiltrated by a phlegmonous œdema which extended inferiorly and to some small extent upon the left side of the cervical region; the muscles were involved in a gray degeneration and their connective tissue was the seat of a hemorrhagic œdema. In the tracheal region an œdematous infiltration in the form of an individual swelling 0.7–1.0 cm. thick; lymphatic glands anterior to the shoulder were swollen and hemorrhagic, hydrothorax not present, pleura costalis dark injected and on sub pleural throughout the chest were hemorrhagic spots from the size of a pea to a bean. The surface of the lungs were covered at every part with a fibrinous exudate which at some points appeared in the form of layers. Beyond the injected condition of the trachea and bronchial the respiratory organs were normal; the bronchial and mediastinal glands at the entrance of the chest were swollen and dark red upon section.

Thymus gland hyperæmic, with here and there punctiform ecchymose; mediastium also ecchymotic. But little exudate in the pericardial cavity; heart muscles anæmic and fatty metamorphosed; numerous small hemorrhages under the endocardium of the right auricle and in the left ventricle many suggillations. In the abdominal cavity a small quantity of fluid, omentum fatty and injected, peritoneum clear, transparent, smooth and also injected, intestines and mesentery of a dark red color. Liver somewhat enlarged, and upon section of yellowish hue. Spleen swollen, soft and hyperæmic, section nearly black; kidneys also hyperæmic. Fourth stomach injected, but others normal. The mucous membrane of the

whole intestinal track was inflamed and maculated with hemorrhages of various sizes. Mesentery glands swollen and infiltrated with blood; the remaining lymph glands of the abdomen were in the same condition.

In the blood and liver somewhat fewer bacteria were found and were smaller than those found in the rabbits. They were particularly numerous in the œdema fluid, spleen and kidneys. Two rabbits and four mice were inoculated with the blood and portions of the organs, with a fatal result after a few days.

About 60 ccm. of the heart-blood, with 200 ccm. of milk, were given to another calf; temperature  $101.7^{\circ}$ , the next day temperature  $103.1^{\circ}$  but the general health was not disturbed; the calf received no sort of solid food and was not affected by the drench. On the fourth day this same patient received an injection of agar culture upon the side of the neck, temperature  $102.2^{\circ}$ ; the following morning was dull and would take no nourishment; temperature  $105.9^{\circ}$ . Eight o'clock the same evening a swelling of the size of one's palm was noticed; temperature  $103.5^{\circ}$ ; general condition better and a quantity of milk injected. The whole region was swollen and doughy in consistency, painful and warm; great depression; in another day swelling subsided to some extent and health further improved. After thirteen days there was a medium sized abscess upon the point of injection, which upon being evacuated and the contents examined, showed the ovoid bacteria in the pus, and the latter when injected into a rabbit, causing death in twenty-two hours. A guinea-pig was also inoculated subcutaneously and died after eight days, of a malignant phlegmon.

Thus we see that the same organism which killed calves in one to two days; killed rabbits in twelve to sixteen hours through a septicæmia, and the guinea-pig through a progressive phlegmon associated with degeneration of the connective tissue; pigeons which had been injected in the pectoral muscles developed only small necrotic spots; of seven chickens inoculated only one died, and that after eleven days illness; the dissection showed necroses of skin and muscles upon one wing (point of injection) and small necrotic portions that



reached from the surface to the deeper interstitial substance of the liver. From the liver and blood agar-agar cultures were made which when later injected into rabbits and mice gave positive results. In all the other chickens the sole influence of the injection was local, and consisted in circumscribed measures which were so extensive that one to two months were required to heal.

Bringing the results together we perceive that only in calves (horned cattle?) mice and rabbits, the disease or rather the bacteria cause an acute and contemporaneously fatal septicæmia; in other animals they cause, as a rule, only local processes. The various animals experimented upon, when ranged in order respecting their reception of the virus, are as follows: rabbit, mouse, calf, swine, guinea-pig, chicken, pigeon, horse and dog.

Through this order of transmission we obtain a means of differentiating the disease from others earlier known, and somewhat similar. Chicken cholera is most severe in its effects upon poultry; the swine plague (German) separates itself from this affection by its affinity for swine; cattle plague selects for its victims our large herbivorous animals. Our disease in some degree covers Poel's pleuro-pneumonia, and yet does not exactly; some of our cases develop more rapidly and are not found with pulmonary lesions; as regards the manner in which the two diseases affect swine we find that the Holland disease induces symptoms simulating swine plague, while our disease had no such effect.

As already remarked, we are inclined to consider all these diseases as so many varieties of manifestation of one cause; of one organism. In order to determine this question I made the following experiment. The six hens which had withstood the influence of calf virus, were vaccinated at the expiration of four to six weeks, with virulent chicken cholera culture. It was my purpose to see in how far the chickens were proof against chicken cholera. Provided the two diseases were only different as regarded virulence, *i. e.*, provided they were due to one and the same cause, we should naturally and logically expect the six chickens proof against chicken chol-

era. Such was actually the case, for they withstood repeated inoculating; with chickens which had not received injections of the calf virus, the result was directly opposite.

Hüppe and Kitt arrived at the same conclusion in experimenting with rabbit septicæmia; chickens and geese were inoculated with attenuated cultures of chicken cholera, and thereby received immunity from rabbit septicæmia, which is otherwise equally as fatal to fowl as to rabbits. These interesting experiments speak for the fact that the oval bacteria of the several diseases herein mentioned are identical, but they do not prove it.

In the abstract, it is possible that two different diseases may give immunity one from the other, especially when the bacteria which produce them are very similar; Roux and Chamberland have proven this by inducing immunity in guinea-pigs from malignant œdema by injecting virus of the carbuncle disease (French *charbon symptomatique*). Concerning the occurrence of these oval bacteria in nature, there is little known; the microbe of rabbit septicæmia is isolated from all putrid substances and impure water. *Gamaleia* always found in the intestinal contents of pigeons a bacteria similar to that of chicken cholera; these were only slightly irritating to poultry, but more so to rabbits; when these were passed through several rabbits they increased in virulence so that a point was reached at which chicken cholera was induced therewith in poultry and pigeons. Salmon found a bacteria in the nasal mucous of a sound swine, that could cause the death of a rabbit in one day; I have also found similar and more or less pathogenic bacteria (1) in the stomachic mucous of diphtheritic calves, (2) in the intestinal contents of a sound mouse, (3) upon a necrotic and thickened portion of a horse's lung, (4) in the pus that escaped from the abscess in a case of periostitic suppuration of the middle region of the foot.

All these oval bacteria agree so exactly—when we overlook the symptoms induced—that it is impossible to determine one from the other. They are characterized by the following peculiarities: They are immobile; they grow slowly

in agar-agar and gelatine; the cultures are not particularly exuberant; they cannot grow upon potatoes at the usual room temperature. Through these properties, and many others, they may be sharply differentiated from other oval bacteria, especially from hog cholera (schweinepest or schweinsdiphtheritis) which are mobile, quick and lively upon gelatine and agar-agar, and grow a slimy exuberant mass upon the same; they flourish upon potatoes, where they form a yellowish brown tract.

Ribbert's bacteria of intestinal diphtheritis in rabbits is more similar to the swine plague bacteria; it is also mobile and grows upon gelatine and agar-agar as well as potatoes in a similar manner to the swine pest organism.

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## REPORTS OF CASES.

*"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."*—VETERINARY RECORD.

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### THORACIC OBSTRUCTION OF THE ŒSOPHAGUS.

BY M. W. DRAKE, D.V.S., Philadelphia, Pa.

On July 29th., at eight A.M., I was called to see a bay gelding about nine years old; he had been suffering about an hour; was taken very suddenly fifteen minutes after eating his morning feed of oats, showing the following symptoms: Standing with all four feet extended, head down and on a level with the neck, a violent expulsive cough with attempts at vomiting, followed by severe muscular contractions of the interior cervical muscles, large quantities of ropy saliva escaping from the mouth and nostrils with each expulsive cough, the attempts at retching following each other at an interval of about ten minutes.

In about three hours these violent symptoms gradually subsided and retching occurred only on introduction of an irritant, such as water or oil, of which he would swallow two or three swallows, which would cause a reflex action of the muscular fibers of the œsophagus, so forcing it up through the œsophagus out of the nostrils and mouth.

*Treatment* : Oleum lini, ℥ ii ; tr. opii, ℥ i, every two hours, tr. opii, succeeded by tr. belladonna.

July 30th.—No change in his condition.

July 31st.—Would try to swallow water which returned through nostrils and mouth.

August 1st—No change except weaker.

August 2nd.—Died at 4 A.M.

*Post-mortem*.—On exposing the œsophagus about nine inches anterior to the stomach there was found a large distention, the surrounding parts very much swollen and softened from the intense inflammation. An opening being made in the œsophagus the obstruction was found to consist of dry, thoroughly masticated salt hay, as large as a man's two fists ; so dry that it would crumble when broken. The œsophagus behind the obstruction was very much constricted. The stomach and intestinal tract were entirely empty.

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## EXTRACTS FROM FOREIGN JOURNALS.

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### COMMINUTED FRACTURE OF THE LEFT BRANCH OF THE LOWER MAXILLARY—PURULENT INFECTION—DEATH.

By MR. DEBRADE.

This interesting report relates to a mare about eleven years old, which had developed a small fistulous tract on the left cheek, a little below the temporo-maxillary joint, the consequence of a kick received from another horse. Her condition was peculiar ; she was much emaciated ; the muscles of the left cheek considerably atrophied ; mastication impossible ; prehension of the food very difficult ; the saliva escaping from the mouth bloody. The fistula discharged a whitish-yellow pus, apparently mixed with synovia, and the probe indicated a fracture of the upper extremity of the left branch of the maxillary, immediately below the condyle and the coronoid process, possibly complicated with arthritis. The author operated for this injury, after casting, by making a large T shaped incision to remove as many as possible of the loose fragments of bone which were present. With the ap-

plication of an antiseptic dressing, the mare seemed to improve, and her wound to assume an aspect which promised rapid cicatrization. Two weeks from the day of the operation, however, the animal did not seem so well. Her temperature had risen, her pulse counting 74 beats to the minute, and so small and thready as to be almost imperceptible. She had frequent chills; her skin was cold, and her breath had a slight fœtid odor. Auscultation showed the respiratory murmur louder, though in places it seemed diminished, and even absent; percussion revealed little more than perhaps some dullness, more marked towards the lower border of the left lung; the wound of the face looked badly, the discharge having entirely subsided. Later in the day an abundant epistaxis occurred, with purulent, bloody discharge escaping from the nose, and the patient died after twenty-four hours of great agony.

All the lesions of purulent injection were observed at the post-mortem, the pleura, the lungs, the entire respiratory tract, the heart and the parenchymatous organs of the abdominal cavity, all participating, and confirming the diagnosis made by the author, a diagnosis which he had also established by the inoculation of guinea-pigs.—*Recueil de Med. Vet.*

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#### ANOTHER CASE OF UNILATERAL PLEURISY—RECOVERY BY THE GRADED COUNTER-IRRITATION.

By MR. MINETTE.

After describing the symptoms which were presented to him by a twelve-or-thirteen-year-old mare, from which he was led to form a diagnosis of unilateral pleurisy of the right side, the author concluded to resort to the application of a severe liniment, at first under the chest, and then renewed every day by the gradual increase of the surface over which it was applied, the application to be persevered in until the respiration at the flank became evidently improved in its character. With this treatment, diuretics and food of easy digestion were prescribed. The animal had so far recovered within a week that she was allowed slow work, and two

weeks after was sold to do a much harder farming work. The repeated and protracted action of the liniment left no blemish, and after a few weeks there remained no mark of the severe treatment to which she had been subjected.—*Ibid.*

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RABIES IN A SOW—SPONTANEOUS RECOVERY—EXPERIMENTAL CONFIRMATION.

By M. F. PEUCH.

This animal was attacked by the peculiar symptoms which characterized her case, while on her way to market to be sold. Rushing suddenly and violently through the field, she threw down a man who had attempted to stop her, also biting him in the hand, and then stopping, endeavoring to conceal herself in a dark spot, threatening to bite whoever approached her. She was finally secured with a lasso and carried home. There she laid quietly down, and became apparently entirely indifferent to everything transpiring around her. When urged to move, it was with a staggering gait, the hind quarters being evidently weak; respiration was difficult; appetite failed; she had no fear of water, and was not excited by the presence of a dog. The next day her weakness became more marked, and she would sometimes assume the dog-sitting posture, at times opening her mouth as if desiring to bite, and grunting more or less when disturbed or punished; was more excited by the noise of clapping the hands together or of stamping the feet on the floor, then showing conclusive movements of the jaws. After twenty-four hours she attempted to get on her feet, but failed. Her appetite then began to return and she took some sloppy food, but seemed to be unable to swallow. From this point the symptoms improved, and about a week later she was pronounced cured.

The author asks, was she suffering with rabies? Believing this to be so, from the history of the symptoms, and considering the clinical value of the case, Mr. Peuch inoculated her, together with six other animals, two dogs, two rabbits and two guinea pigs, with an emulsion of pure rabid bulb. The sow resisted, with three of the other animals, and the three others died of rabies. Another experiment was made

in which the sow, the three animals which had resisted the first inoculation, and four other subjects received another injection of rabid solution, in the anterior chamber of the eye. Of these, all died with rabies except one dog and the sow which had resisted the inoculation.

Conclusion: *First*, this sow was certainly rabid. *Second*, this disease, in swine at least, is susceptible to spontaneous recovery.—*Revue Veterin.*

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#### ACCIDENTAL INOCULATION OF ACTINOMYCOSIS IN A HORSE.

By PROFESSOR E. PERRONCITO.

In July, 1881, a horse received a wound on the anterior part of the stifle joint of the left leg, with section of the muscular fibres, solution of the skin, and bruise of all the surrounding parts. During the treatment which his injuries required, the horse was kept in a stable occupied by cattle. After forty days the wound was closed, leaving but a hard, subcutaneous swelling, and slightly deforming the leg. The tumor was treated by the application of a few points of the actual cautery, but remained in the same condition for some time. But subsequently it began to grow, and notwithstanding several attempts to check its development, continued to increase. At length, supposing that the trouble might be due to a deep-seated suppuration, the animal was thrown in order to be operated on for the escape of the suspected gathering. The appearance of the tumor, however, was such, that believing it to be of a sarcomatous nature, its entire dissection was performed. The microscopic examination made by the author showed a large number of actinomycosis tufts. The patient was ultimately destroyed.—*Ibid.*

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#### TIBIO-TARSAL DISLOCATION.

By MR. GAVARD.

The interest attaching to this report arises largely from the rarity of cases of the nature referred to. The case was caused by a collision between two horse railroad cars, in which one horse was thrown, remaining on the ground unable

to rise without help, being placed on his feet with much difficulty. Suffering great pain, he was conveyed to his stable, where he remained until seen by the author the following day. He was then standing well on his four legs with nothing at first sight to indicate that there was anything amiss with him. When called upon to move, however, locomotion was found to be almost impossible, and when attempted, occasioned the greatest pain. The right hind leg remained at rest, stiff and inflexible, and when displaced was carried as if formed of a single bone, the foot dragging on the floor. Pressure on the hock, especially forward, also occasioned great pain. Though there was, apparently, no visible deformity, yet on the inside a sharp and hard projection was observed, which greatly resembled the lower end of the tibia. Flexion at the hock was impossible, and when attempted, caused a faint, dry friction sound, but no crepitation. The animal being considered incurable, was destroyed. At the post-mortem the external lateral ligaments were found irregularly lacerated at their tibial attachments; the anterior capsular ligament was torn, and the tibia had been thrown inward, leaving the external groove of its lower end, and resting on the inner border of the trochlea of the astragalus; and no more after death than during life could the tibio-tarsal joint be flexed. There was no indication of fracture.—*Journ. de Zootechnie.*

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#### PILOCARPINE IN TETANUS.

By PROF. FRIEDBERGER.

After the good results reported by Dr. L. Casati, the learned professor of the Munich School, desirous to test the therapeutic value of pilocarpine, employed it in seven cases. Six of these died without having exhibited the slightest amelioration which could be traced to the use of pilocarpine, which, on the contrary, had seemed to hasten the end. Recovery occurred in only one case, which was of a chronic nature, but a close watch of the manifestations of the patient failed to show anything which could be attributed to the use of the drug. Professor Friedberger consequently considers



that pilocarpine is not only useless in the treatment of lock-jaw, but is, in fact, injurious and dangerous. The sur-excitation which accompanies the ptyalism, the efforts for defecation, and the pulmonary complications following, suggest the objections to its use. And again its contra-indication is rendered evident, as hastening the termination, by the fact that immediately after its administration the patient begins to salivate, to perspire and to defecate, while its respiration becomes accelerated and anxious, and one or two hours later he falls down to rise no more.—*Monat. f. Prakt. Thierh.*

### ENORMOUS VARICE OF THE SPUR VEIN.

BY ED. DEBLOEK.

For two years past a horse had carried on the back of the left spur vein a varicose tumor, about the girth. It was then of the size of a nut, fluctuating and disappearing with a slight pressure of the hand. Of late it had enlarged, until it had become of the size of a child's head. Below the tumor the skin was thinned, and ulceration was threatening. An opening, made with a fleam in the most dependent part of the growth, was followed by the escape of a stream of blood more abundant than that which is usually obtained by a similar one made at the jugular. The opening was closed with two fine sutures, the object being to obtain the obliteration of the vein and of the varice by the formation of a large clot of blood. This was realized, and the next day the soft and fluctuating tumor was replaced by a hard, painful and œdematous swelling. By local friction and other applications, this soon assumed the character of a multilocular abscess, which ulcerated, discharged and healed, leaving, after a month, only a small fibrous and painless induration, of the size of a pigeon's egg.—*Am. de Med. Vet. Belg.*

### CONSTIPATION OF THE HORSE.

BY A. COPETTE.

For five days a pony had been suffering with obstinate constipation, which had continued refractory to all forms of treatment. The author prescribed sulph. of strychnia, 25

centigrammes; chlorhydrate of morphia, 50 centigrammes; distilled water, 50 grammes, to be administered by tracheal injection. Of this, three grammes were injected in the trachea every half hour. After the third injection the colics subsided, and a stimulating rectal injection was followed by a copious evacuation of hard balls of manure. A low diet, with farinaceous drinks containing sulphate of sodie, brought on a rapid recovery.—*Ibid.*

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## BIBLIOGRAPHY.

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### THE PRINCIPLES AND PRACTICE OF VETERINARY MEDICINE.—

BY PROFESSOR W. WILLIAMS.—Sixth Edition, revised by the author, assisted by his Son, W. Owens Williams, F.R.C.V.S., F.R.P.S.—New York, Sabiston & Murray, 916 Sixth Ave.

The first publication of this work some years ago, by Prof. W. Williams, has been followed, from time to time, by the issue of revised editions, in each of which he has some valuable addition and improvements to present to his readers. But we do not believe that any of his essays at amendment have proved equally valuable with those which have been embodied in this last and sixth edition, which is but just offered to American veterinarians by the house of Sabiston & Murray. This book, which now lies before us, was printed in England and appears in an unusual style of printing and binding. Though much larger than any of its predecessors, this volume contains about the same amount of material. There are, however, some few short additional articles introduced, and many of the old ones have been enlarged. But the principal improvement consists in the introduction of numerous additional illustrative plates, colored and uncolored, many of which are entirely new, and of great value in enforcing and elucidating the text.

Those which precede the chapters upon the circulation and the blood, those illustrating glanders and farcy, and last, but not least, those relating to parasites and to bacteria, form an important reinforcement of the descriptive teaching.

We have none but words of commendation to offer in be-

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half of this excellent work, which established, long since, and has amply maintained, its distinction as being the admitted standard and text book in veterinary science and practice, in English speaking countries.

VETERINAR KALENDER.—pro 1891. By Dr. Alois Koch, Wein.

We have received from Wein the fourteenth issue of the Kalender published by Dr. A. Koch. It is for our German brethren the equivalent of the Physician's Visiting List for practitioners on this side of the Atlantic. Well adapted to the daily requirements of the busy veterinarian, it contains many items of useful information, amongst which are not only a catalogue of most of the best German books and journals, but also a resumé of the announcements of all the veterinary schools of the world. Professor Koch is a hard worker in behalf of his profession, and has added many volumes to veterinary literature. His Encyclopedia of Veterinary Medicine, his journal, the *Revue für Thierheilkunde and Theirzucht*, stand amongst his best publications. This little Kalender will of course be a valuable help and a daily convenience to our German reading veterinarian brethren.

Some of our American writers might do a good thing by publishing a similar "Kalender" or Visiting List, in which subjects of American interest could be included, with such items and hints for reference as every man in professional life of any kind needs at times, and ought to appreciate.

QUIZ COMPENDS.—Equine Anatomy and Physiology. By Dr. Ballou. (P. Blakiston, Son & Co., Philadelphia, Pa.)

A nice little volume of two hundred pages, well adapted to help the veterinary student in revising his studies, and of use to the practitioner as well, to refresh his mind and quicken his memory, in the exigencies which will sometimes overtake the best of us.

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## OBITUARY.

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WILLIAM R. J. MITCHELL, D.V.S., M.R.C.V.S.—It is with great regret that we announce the death of this worthy

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member of the Alumni of the American Veterinary College, class of 1885; when he graduated second of the class. The year following his graduation he went to England, and took a post graduate course, receiving his M.R.C.V.S. in 1887. For a number of years he served as assistant to Dr. A. Lockhart, and at the death of his former preceptor entered upon the field of practice which had thus been left vacant. Doctor Mitchell had suffered for a long time with pulmonary phthisis, and at the time of his death had just reached the city of Denver, Colorado, whither he had gone with the hope of recovering his health.

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## COLLEGE NEWS.

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### ALUMNI ASSOCIATION OF THE CHICAGO VETERINARY COLLEGE.

We have received the news of the reorganization of the Alumni of the Chicago Veterinary College, with a copy of the constitution and by-laws which have been adopted for the government of that body. The following gentlemen have been elected officers for the year: Dr. James N. Wright, of Chicago, President; Dr. W. Myers of Ft. Wayne, Ind., first Vice President; Dr. F. S. Schoenliber of Morris, Ills., Secretary and Treasurer. This is a good move on the part of the Chicago Alumni and we hereby proffer them our sincere wishes for the success of their new organization.

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### ONTARIO VETERINARY COLLEGE.

We have received from the worthy principal of the Toronto institution the following notice, of which our overplus of matter and lack of space has hitherto prevented the acknowledgment:

On October 22d the session of 1890-'91 of the Ontario Veterinary College was opened in the lecture hall of the new building, in presence of a large number of students and others. The introductory address was given by Dr. Duncan, Professor of Anatomy, and was most cordially received by the students. The new and spacious buildings, that were occupied for the

first time during the course of last session, have proved to be eminently satisfactory for the purposes for which they were destined, and reflect much credit on the architect and designer. Students here from all parts of the North American continent, and even some from across the ocean, find a college well equipped in all the essentials for a thorough theoretical, as well as a practical, education in veterinary science.

The building for dissecting purposes, situated some few hundred yards from the college itself, was opened the first week in October, many senior students wishing to begin dissecting before the lectures commenced. This building, also, in all its requirements, including water service, drainage, ventilation and warmth, can scarcely be excelled.

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#### BALTIMORE VETERINARY COLLEGE.

The news of the closing of that young institution reached us through private correspondence, which said: "The Baltimore Veterinary College has collapsed, Prof. Faville having resigned, and the chair of Dr. Ward declared vacant."

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### NOTICE.

*To the Members of the United States Veterinary Medical Association.*

The President has made the following appointments as Resident State and Corresponding Secretaries :

#### RESIDENT STATE SECRETARIES, 1890-1891.

California.....	Dr. Ward B. Rowland, Pasadena.
Connecticut.....	.....Dr. Harrison Whitney, Norwalk.
South Dakota.....	.....Dr. C. A. Cary, Brookings.
Delaware... ..	.....Dr. H. P. Eves, Wilmington.
District of Columbia.....	Dr. E. S. Walmer, 3222 M St., Georgetown.
Georgia.....	.....Dr. August Jasme, Atlanta.
Indiana.....	.....Dr. A. J. Thompson, Evansville.
Illinois.....	.....Dr. C. E. Hollingsworth, La Salle.
Iowa.....	.....Dr. S. Stewart, Council Bluffs.
Kansas.....	.....Dr. D. Lemay, Fort Riley.
Kentucky.....	.....Dr. James L. Kidd, Lexington.
Indian Territory.....	.....Dr. Gerald E. Griffin, Fort Reno.
Maine.....	.....Dr. F. W. Huntington, Woodford.
Massachusetts.....	.....Dr. L. H. Howard, Boston.
Michigan .....	.....Dr. E. A. A. Grange, Lansing.
Minnesota.....	.....Dr. R. Price, St. Paul.

Montana.....	Dr. M. A. Piche, Fort Custer.
Missouri.....	Dr. John S. Meyer, St. Joseph.
Maryland.....	Dr. A. M. Clement, 211 St. Paul St., Baltimore.
New Jersey.....	Dr. Wm. H. Lowe, Paterson.
New Hampshire.....	Dr. W. T. Russell, Nashua.
Ohio.....	Dr. Wm. R. Howe, Dayton.
New York.....	Dr. S. K. Johnson, 117 W. 25th St., N. Y. City.
Oklahoma Territory.....	Dr. C. D. McMurdo, Fort Sill.
Pennsylvania.....	Dr. W. S. Kooker, 457 N. Fourth St., Philadelphia.
Rhode Island....	Dr. Jas A. McLaughlin, 1 Watermann St., Providence.
South Carolina.....	Dr. N. McInnes, Charleston.
Tennessee.....	Dr. J. W. Schiebler, 312 Second St., Memphis.
Vermont.....	Dr. I. F. Page, Manchester.
Virginia.....	Dr. John A. Myers, Harrisonburg.
Wisconsin.....	Dr. V. T. Atkinson, 563 Milwaukee St., Milwaukee.
Wyoming.....	Dr. Alexander Plummer, Mammoth Hot Springs.

## FOREIGN CORRESPONDING SECRETARIES.

Japan.....	Dr. Hara Taha Yokura, Komaba, Tokio.
New Brunswick.....	Dr. J. H. Frinck, St. Johns.
Ontario.....	Dr. G. Grimshaw, Kingston.

As the duties of General Secretary have become so multiplied and onerous, it is desirous that in the future all committees and members of the profession desiring information or other matter pertaining to the Association, will apply for the same through these Assistant Secretaries. All those desiring to become members of the Association are recommended to apply through their respective State Secretaries, as the approval of their credentials will greatly facilitate the work of the Comitia Minora. Blank applications for membership will hereafter be furnished and must be properly filled and filed before an applicant's name can be considered. All future certificates of the Association will only be granted after the member-elect has filled and filed certificate of his willingness to sign and uphold the Constitution and By-Laws, a copy of which will be mailed with each certificate, that the members may become fully aware of the requirements of the Association.

It is earnestly desired that all members-elect who have not qualified, will do so on or before January 15th, 1891, as the new list of officers, committees and members will be placed in the hands of the printer at that date. Notice is given that no names will be placed in the list of qualified members, except those who have complied with the requirements of membership.

W. HORACE HOSKINS, *Secretary*,

RUSH S. HUIDEKOPER, *President*.

12 South 37th St., Philadelphia.

## SOCIETY MEETINGS.

## IOWA STATE VETERINARY MEDICAL ASSOCIATION.

## FIRST DAY.

The regular annual meeting was called to order at Des Moines, Ia., at 10 A.M., November 13, 1890. Dr. L. A. Thomas was made President *pro tem*, the President and Vice-Presidents being absent.

Members present were, Drs. Thomas, Morse, Inger, R. C. Sayers, E. E. Sayers, Campbell, S. H. Johnson, M. E. Johnson, G. A. Johnson, Bown, Owens, Stalker, Howell, Lawson, Buffington, Thurtle, Stewart. Guests: Drs. Edwards, Nelson, J. W. Williams, Fuller, Simcoke, Stark, Hall, Booth, Ashworth, Platt, Brown, Norton, Derwent, Reynolds, Gibson, Emery and W. L. Williams of Bloomington, Ill.

The minutes of the last meeting were read and approved; other routine business was transacted.

Dr. J. A. Campbell was present at the hour appointed, to explain the charge of unprofessional conduct filed and recorded at a previous meeting. The Secretary read the charge and Dr. Campbell denied being the author of the printed article upon which the charge was based. He claimed that his name was signed to the article without his knowledge or consent. The sequence of this explanation was the adoption of the following resolution offered by S. H. Johnson and seconded by G. A. Johnson.

*Resolved.*—If J. A. Campbell will publish in the *Iowa Homestead*, over his signature, a statement that he did not authorize the use of his name in connection with the printed article upon which the charge was based, and will file with the Secretary a statement from Chamberlain & Co. to the same effect; that Dr. Campbell be exonerated from the charge.

#### AFTERNOON SESSION.

Association was called to order at 1 P. M.

The Secretary read several communications from absent members, also a letter from W. Horace Hoskins, Secretary of the United States Veterinary Medical Association, calling especial attention to ethics, and a letter from Prof. A. Liautard, making propositions to furnish reprints of our proceedings and papers.

Ethics was discussed at some length, when a motion by the Secretary, duly seconded, creating a committee to present a specific Code of Ethics for consideration, was carried. Drs. Morse, Stalker and Stewart were appointed such committee.

A motion duly seconded to accept the offer of Prof. A. Liautard to supply our society with reprints of our proceedings and papers, was adopted.

R. C. Sayers and T. A. Bown were named to fill vacancies in the Board of Censors.

S. H. Johnson, H. Ovens and J. D. Ingar were appointed Auditing Committee to examine the Treasurer's books.

The Association adjourned, to meet at Dr. Morse's Infirmary, where several interesting cases were seen and clinical demonstrations witnessed by the members.

Among the cases was a mare which had suffered laceration of the perineum, but was now completely healed, an excellent result having been obtained by surgical interference; a case of odontal tumors in a four-year-old gelding; bur-sattie in a stallion; rapid anæsthesia by the use of a Carlisle muzzle was demonstrated, and the details of its use and management explained by Dr. Thomas. Dr. Morse exhibited the good qualities of an operating table recently obtained.

#### EVENING SESSION.

The Board of Censors reported favorably upon all application for membership submitted to them and the report was received.

Moved by T. A. Bown, seconded by G. A. Johnson, that the Secretary cast the ballot of this Association for each of the applicants found worthy of membership. Carried.

Secretary :—Pursuant to the instruction by this Association I cast the ballot of this Association for each of the applicants for membership, and the following named gentlemen have been duly elected members of this Association :

F. H. P. Edwards, Iowa City ; J. W. Williams, Glenwood ; J. O. Simcoke, Stuart ; E. T. Hall, Knoxville ; C. A. Ashworth, Ashawa ; John E. Brown, Oskaloosa ; A. E. Derwent, Waverly ; J. I. Gibson, Denison ; R. R. Hammond, Le Mars ; John McBirney, Charles City ; S. B. Nelson, Ames ; Q. C. Fuller, Des Moines ; J. M. Stark, Fort Dodge ; L. E. Booth, Corydon ; J. H. Platt, Montezuma ; J. C. Norton, Wilton ; M. H. Reynolds, Des Moines ; J. J. McGlaughlin, Webster City ; Jas. Hansen, Clarinda.

Dr. Stewart, Chairman of the Committee on Collective Statistics, submitted the following report :

Letters were addressed to the other members appointed on this committee by its Chairman, requesting an expression of their notions as to the best methods to pursue in the accomplishment of the purposes for which this committee was created. The letters did not return, neither did replies to them. After some weeks of delay, the Chairman of this committee concluded to shoulder all responsibility in this matter and had a quantity of blank forms, entitled "Notes on Heredity," printed and distributed by mail to all the members of this Association. Only one bundle of blanks returned, hence the conclusion that all the members but one had received them. On the back of these blank forms was printed this letter :

COUNCIL BLUFFS, IOWA, Jan. 1, 1890.

*Dear Doctor.*—At the last meeting of our Association a resolution was adopted creating a committee on collective statistics, for the special purpose of securing the co-operation of all the members in the collection of reliably observed facts concerning heredity of disease and habit among domestic animals. In furtherance of that object, these blanks are issued, trusting that you will interest yourself in this work, making as complete notes as possible of such cases as fall to your care or notice. Preserve these notes, subject to the call of the committee, who are expected to collect and classify them into a report to be presented at the next annual meeting.

Fraternally,

S. STEWART,

*Chairman Com. Coll. Statistics.*

About October 1st the call was issued to the members for the notes which it was supposed they had filled out and laid away carefully in some pigeon hole of their desks. Five interested members collected the facts and returned to your committee notes of fifty cases. Some five or six others sent letters expressing their regrets for not having any notes to contribute, and assigning reason for their delinquencies. From the remainder of our membership nothing has been received to indicate the slightest interest in this subject, which is of no inconsiderable importance to us as veterinarians who are called upon so often for opinions and advice by our employers.

This display of negligence or lack of interest in this subject on the part of the majority of our membership is made away with if every member will resolve to do something in this line during the next year ; will carefully inquire into a



few cases, and will have at least a dozen notes to send the committee when the next call is issued.

Of the notes received twenty-two were cases of specific ophthalmia, fifteen ringbone, twelve spavin, five cribbing and three kicking. In the twenty-two cases of ophthalmia the average age at which the disease developed was five years. In one case it developed during the first year of life, while in others it appeared after the ninth year was reached. Sex does not appear to be a predisposing factor, there being twelve males and ten females. 70 per cent. were bay, leaving only 30 per cent. for greys, browns and blacks. One was a hambletonian mare, two percheron stallions, eleven grade percherons, two grade clydes, six unclassified. This malady affected the sires of five, the dams of seven, and the granddam of one. Three notes stated that other offspring of the given sire were subjects of this disease, and in the case of one stallion reported, several of his colts developed ophthalmia. In five cases both sire and dam had sound eyes. In six notes no history was obtained.

It is very evident that specific ophthalmia is a very prevalent trouble in Iowa, and no practitioner is lacking in opportunity to secure a definite history of several cases each year. The cases where the ancestry are known to never have suffered from this disease are just as important in the collection of statistics as are those with an opposite history, for it must be remembered that we must not be prejudiced in favor of the theory of heredity by preconceived opinions. It is ours to gather the facts and deduce our opinions from these facts.

Of the fifteen cases of ringbone neither sex, color nor breed seem to be factors of importance in the cases reported. The age at which it is developed extends from the first to the eighth year. Three cases were under two years old, two were two years old, four three years old and the others were six, seven and eight. In one case its sire had ringbone, in another the dam was afflicted. Out of nine colts from a mare which had two ringbones on the posterior limbs, and navicular disease in her front feet, all the colts living to be five years old became diseased. Three had specific ophthalmia, two had spavin, one navicular arthritis and one had rickets.

One hambletonian stallion possessing a ringbone sired at least two colts which developed a spavin. In four cases neither sire nor dam had ringbone. In the other no history was given.

There were twelve cases of spavin reported, of which ten were males and 12 were females. Eight were bay, two grey, one black and one roan. Three were percherons, two were trotting bred, the remainder not specified. Only one developed the disease at two years, three at three years, three at four years and one each at five, six, seven, eight and ten. The dam of one mare was spavined. One hambletonian stallion was sired by a horse having faulty conformation of the hocks, and he developed spavin when four years old. Many of his colts have developed spavin, also had curby hocks.

Five cribbers are noted, three males and two females; two percheron, one hambletonian, two unknown. This habit developed in one at the age of twenty-one months, two when three years old, in one at four, the other not given. The dams of two were cribbers. One cribbing percheron was sired by a cribber, and she foaled two colts which acquired the same habit, making a record of three

generations of cribbers. The three notes on kicking contain too little history to merit remark.

Dr. Morse: I must admit my negligence to give this subject proper attention, and am surprised that the few notes sent in should contain so much of practical interest. It shall receive my earnest co-operation in the future.

Dr. G. A. Johnson: I found it so very difficult to get a truthful history of cases, that I cast the scheme aside, but I shall be more persistent hereafter, and have some reports for the next call.

Dr. Stalker: I am really interested in this brief report of a few cases, and as this phase of investigation is far-reaching in its importance, I hope every member will interest himself in this work.

Dr. Brown: I doubt the heredity of spavin. I think it depends on the shape of the leg and lack of care of the foot.

Dr. Campbell related the history of a locally well-known trotting stallion kept in Des Moines for several years. The stallion had curby hocks and a large number of his get, owned now in and about that city, are subjects of curb, spavin, ringbone and allied troubles.

Dr. Booth thought the tendency to umbilical hernia in foals was hereditary, and cited several cases. Others related the histories of cases, evidencing the fact of hereditary tendency to disease.

Dr. Stewart: Gentlemen, it is clear to me that there is plenty of evidence to be had to establish definite notions on the subjects under consideration, and I hope you will place your observations in a tangible form, by using the notes on heredity sent you by the committee.

The committee was continued another year.

Prof. Stalker's paper was advanced on the programme, because he could not remain for the second day. The subject "Cystic Calculi and the operative procedure for its removal," was clearly presented and illustrated by several specimens removed. J. D. Ingar also exhibited specimens. This paper was discussed to a considerable length, after which the Association adjourned to the banquet hall of the Savery House and acquitted itself after the usual fashion on such occasions. Prof. M. Stalker proved himself an accomplished toast-master, and the whole programme was highly enjoyed by all.

#### SECOND DAY.—MORNING SESSION.

The Association was called to order by Dr. Thomas, President *pro tem*.

The Auditing Committee found the Treasurer's accounts correct.

Moved by G. A. Johnson, and duly seconded, that we tender a vote of thanks to Prof. A. Liautard for the extra number of the VETERINARY REVIEW, which contains so complete a report of the Chicago meeting of the United States Veterinary Medical Association. Carried by unanimous vote.

The following report of the Committee on Legislation was submitted;

DES MOINES, IOWA, Nov. 13th, 1890.

*To the President and Members of the Iowa State Veterinary Medical Association.*

GENTLEMEN.—Your Committee on Legislation reports as follows:

In order to simplify matters, and with the view of obtaining a correct idea from the members of the profession, in regard to the subject of legislation for

the purpose of regulating the practice of veterinary medicine and surgery in this State, it was resolved by the committee, that we should draft a bill for the purpose of discussion, and that a copy of the same, together with a circular letter, should be forwarded to each qualified practitioner in this State, with the request that he would consider the subject and favor us with an expression of his opinion, or himself draft a bill and forward the same to the committee.

At the time of the canvass there were in all sixty-seven qualified practitioners in the State, and out of that number thirty-six reported by answering the questions submitted in the circular and one by drafting a bill.

The answers received by the committee are as follows: Thirty-eight in favor of legislation; two not in favor of legislation; four in favor of a five years' practice to entitle to register; thirty-five in favor of an examination to entitle to register; four in favor of including castration and spaying under the head of veterinary surgery; thirty-five not in favor of including castration and spaying under the head of veterinary surgery; thirty-eight in favor of presenting a bill to the Legislature; two not in favor of presenting a bill to the Legislature.

Upon consideration of the foregoing opinions from the profession, your committee respectfully recommend that steps be taken toward obtaining such legislation as will meet the requirements of the profession, and raise the standard of veterinary science in the State to the sphere to which it rightfully belongs, and thereby protect the public from the many impositions now practiced upon them by numerous unskilled and incompetent persons styling themselves veterinary surgeons. It is further recommended that a bill be drafted between this and the next regular meeting of the Association, and that such bill be then presented to the members of the Association for their approval.

In regard to ways and means, your committee report as follows:

In view of the fact that at the present time only about fifty counties in the State have a qualified veterinarian, we recommend that a complete list be made of all towns in the State which are unprovided with a qualified practitioner, with the view of assisting new graduates to find good locations, and that a circular be addressed to all the veterinary colleges in the United States, requesting prospective graduates to correspond with this Association. By this method in the course of two years there will be a sufficient number of qualified practitioners in every county in the State, which fact alone will remove one of the greatest obstacles to the enacting of a veterinary law. We further recommend the appointment of a committee of five, one from each section of the State, who shall be required to attend the meetings of all live stock associations and farmers' institutes, each member of said committee to attend the meeting held in his own district, and present an address on the subject of veterinary legislation and use every honest endeavor to gain their support and co-operation in the matter.

In order to meet the necessary expense which will be incurred, we recommend that the members of the Association consent to be assessed the sum of \$5.00 each, which together with any voluntary subscriptions, shall be used to defray the actual expenses of those selected by the Association to carry out its instructions.

In conclusion, we are of the opinion that no State in the Union is more in need of veterinary legislation than our own State of Iowa, and that in the event

of the subject being properly presented to the stock breeders throughout the State, there is every reason to believe that we shall receive their hearty co-operation and especially so as we do not ask this in the light of protection to ourselves but for the poor dumb brutes that for years past have been compelled to submit to unnecessary pain and even cruelty inflicted upon them by ignorant, unschooled and officious empirics.

Not only will a veterinary law protect our dumb animals, but it will also benefit the stock owner to a vast extent, both by decreasing his loss from various injuries sustained by stock, and also by being a guarantee from the State that the man whom he consults is in every way competent to give him good sound advice, and that he will not be paying out good money to a person who in reality perhaps knows less of the diseases of stock than the owner himself, and yet presumes to set forth his qualifications by an experience of twenty-five or thirty years practice; and we deem legislation the best and most expedient way of raising the standard of ethics of the profession in the State.

L. R. THOMAS, }  
G. A. JOHNSON, } *Committee.*

Moved by Dr. Stewart and duly seconded, that the present committee on legislation be continued, with an addition of two members, to be named by the chairman, and they be instructed to carry out the recommendations of the report just submitted. Carried.

Dr. Morse: I was recently surprised to hear a member of a Farmers' Alliance say that his local organization had been considering the qualifications of veterinary practitioners offering their services in his alliance district and had made a list of the properly educated veterinarians.

Dr. Brown: I find the farmers in my district are giving this matter some attention.

Dr. Howell: The President of the State Farmers' Alliance recently invited me to give them an address at their next meeting on the subject of legislation.

Dr. Thomas: I think it will only be necessary to thoroughly interest the stock breeders' associations in this cause. When so interested they will see to it that proper legislation is obtained.

Dr. Johnson: I will read to you the second paragraph of Dr. Atkinson's letter in Dr. Peters' report. This is surely a discouraging report from Wisconsin. I am in favor of an ironclad law. If the law is properly framed it will work much good to the State of Iowa.

Dr. Stewart: I would also call your attention to the report of Dr. Peters, made to the United States Veterinary Medical Association in Chicago, and more especially to his conclusions after much patient study of this subject. (Dr. Peters' conclusions were read). These conclusions are worthy of your thoughtful consideration before any legislation is attempted. The trouble with the laws in the various States governing the practice of medical science is the inadequacy of the enforcement and penalty clauses.

The President, Tait Butler, finding it impossible to be present at this meeting, forwarded his address by mail and it was presented by the Secretary.

TO THE MEMBERS OF THE IOWA STATE VETERINARY MEDICAL ASSOCIATION.

*Gentlemen:*—It is customary in such Associations as ours for the President to present an annual address, making some pretensions to scientific value.

I had intended to do my utmost to comply with the demands of custom, but much other work and poor health during the past two weeks has compelled me to send you by way of apology the following fragment in the line of a few suggestions.

I sincerely regret my physical inability to be with you in person, as to me the meetings of the Iowa State Veterinary Medical Association are occasions of unusual importance and interest. Having taken part in the "labor" which "brought it forth into the world" and had some of the care of it during its infancy, I may be excused if I look upon it with feelings akin to those of a parent for a child.

The Iowa State Veterinary Medical Association justifies its existence by proclaiming as its motives "the mutual advancement of its members in veterinary science, the cultivation of fraternity and the elevation of the veterinary profession." Can any member present conceive of a more noble purpose in life than the elevation of his fellow man socially and intellectually? Certainly these are objects worth the best efforts not only of this Association but also of every individual veterinarian in Iowa.

We are honored by being permitted to claim a membership in a scientific profession; we are honored by membership in an Association which exists for a truly noble purpose, but what have we done to merit such honors? Have we during the past year given a fair share of our time and energy to the advancement of veterinary science? Let us look back at our records in this field of labor. First, what have we done in the line of literary work during the past year? The veterinary journals have received two or three articles from Iowa veterinarians, and if I mistake not but one of these related to veterinary science proper. Neither a single paper of more than ordinary scientific value, nor the discovery of a single scientific fact has gone out from our ranks. Not only have we completely failed in point of results but also in point of actual efforts.

Again, what have we done to cultivate a spirit of professional fraternity? Did we avail ourselves of the best opportunity in this field of work that has ever been offered in the history of our profession in America? I refer to the recent meeting of the United States Veterinary Medical Association, held, as it were, at our very doors, and am compelled to admit with chagrin that only four Iowa veterinarians were in attendance. Is not this fact a sad reflection on our professional loyalty and devotion to science? Is it not a stain upon our reputation as progressive veterinarians that even time itself cannot efface?

This, gentlemen, is a true statement of the showing we have made under the most favorable circumstances. If our opportunities had been less brilliant it is not difficult to conceive the still more insignificant showing we must have made. I repeat that our opportunities have been brilliant, for never before in the history of our journals and associations has such an effort been made to stimulate literary and scientific work. There are but few veterinarians in Iowa who have not been solicited to write for one or the other of our veterinary journals, and as to the recent meeting of the United States Veterinary Medical Association in Chicago, all were duly notified of the exact date and place of the same. Many were invited by personal letter to attend, while others were begged to lend the influence of their presence. Yet, what has been the result? The personal and professional interests of many Iowa veterinarians were involved in the re-

sults of this meeting, and yet of all this class but one possessed sufficient energy and professional enthusiasm to induce him to sacrifice a few paltry dollars and less time. When self-interest is added to professional interest and yet the combination fails to arouse even a spark of enthusiasm, the prospects are certainly not bright. We have men in Iowa who by their ability, professional standing and other resources are well fitted to take an active part in the advancement of our profession, but I regret to say that when their services are most needed they are too often not at their post of duty.

Let us discontinue these pessimistic reflections and turn our attention from what has not been done to what may be accomplished if a little interest be taken in matters of importance to the profession in general.

First, what can we do to aid our veterinary journals? Our first duty is to become subscribers for them. Let me urge the absolute necessity of this course and if possible that each member of this Association also subscribe for the *London Veterinary Journal* and one of the leading journals of human medicine. To accomplish this end, two methods appear feasible. One is for the Association to subscribe for as many numbers of each journal as it has members in good standing and add the price to the annual dues of each member. In this way a reduction in price might be secured. The other method is to appoint a committee of three to solicit subscriptions from all the regular graduates in the State. The former method appears to me practicable and at the same time more effective than the latter.

This may seem an unusual course, but the case is a desperate one. Not more than half of the regular veterinarians in Iowa subscribe for any medical journal. Therefore I ask that one of these methods be adopted, not alone in the interest of the journals but particularly for the benefit of my colleagues and myself. We can no more afford to be without our medical journals than politicians without their daily newspapers.

Our second duty to the veterinary journals is to write for them. I am aware that all are not competent to do this with advantage to the journals, but we have at least a dozen veterinarians in Iowa who are competent to write papers of interest and value if they would but devote the requisite time and energy to this particular class of work. I would therefore suggest that this Association, through its President and Secretary or a special committee of three, attempt to furnish six papers to each of the two veterinary journals in this country, during the coming year. I don't mean papers hurriedly and carelessly prepared, with only the object of filling up so much space, but papers carefully written only after a most thorough research and practical experience in the particular field chosen. This can be accomplished to the credit of our Association and the profit of our journals and the profession at large, if all will but do their duty.

After one more suggestion I will conclude this brief address.

Professor Liautard, editor of the *AMERICAN VETERINARY REVIEW*, has offered to reprint in pamphlet form, from a full account of the proceedings of this meeting furnished for publication in his journal, as many copies of the same as we may desire for distribution among our members, at a merely nominal price, not to exceed actual cost of production. I would respectfully suggest that the Secretary be instructed to obtain as complete and accurate an account of the proceedings of this meeting as possible, and together with the papers read, send it to Prof

Liautard with an order for as many copies of the same as the Association may deem required.

Thanking you for the courtesy shown me during my term of office, wishing you a pleasant and profitable meeting and expressing a bright hope in the future prosperity and usefulness of our Association, I remain,

Yours fraternally,

TAIT BUTLER.

REYNOLDS, ILL., Nov. 13, 1890.

Dr. Brown: I am very much interested in Dr. Butler's statements. I think we ought all to be subscribers and readers of the journals.

Dr. G. A. Johnson: It seems to me the journals are so scientific that the ordinary member of the profession is discouraged from sending practical papers for publication.

Dr. W. L. Williams: The intensely scientific articles are printed in such excess of more practical interest because the practical papers cannot be obtained and the columns of the journals must be occupied. I do not know of any instance of a refusal to publish any practical contribution sent them.

Dr. Johnson: I was solicited for a paper read by me before this Society last year. I forwarded the paper, but it has not been published as yet.

Dr. Derwent: I sent a report of a, to me, interesting case to one of the journals, which was promptly published.

Dr. Morse: I very much admire the high tone of our journals. Let us help to maintain the high plane which they occupy and get upon that level ourselves. Our practical papers can be scientific.

Dr. Johnson: Who as practitioners care to read about the anatomy of wild fowls and monkeys, and long-drawn-out articles on tuberculosis in birds.

Dr. Williams: It occurs to me that all articles on tuberculosis, even in birds, are worthy of our perusal since this disease is found to be so widely distributed throughout the animal kingdom; then if the reader does not feel any interest in some special articles published, he can omit them; others may enjoy and appreciate them.

Dr. Stewart: I am satisfied that any paper prepared with reasonable care by any member of this Association will be quite sure of publication if it reaches the editorial office. The management of our journals are very glad to receive contributions and reports of cases, and will be pleased to increase the space allotted to this class of material if the supply is abundant. So I would suggest that you lay aside any hesitation you may have in this matter and send reports of your cases to the journals. Dr. Butler's address cannot be considered as flattering us as an active Association. I hope we may act upon some of his suggestions and do some work of merit this coming year. Cannot we gather the facts for several papers by co-operative observation and study? I think we can.

Dr. Williams explained a plan whereby the Society as a whole could work together in the study of one subject and the construction of one paper, and offered to take the subject of osteo-porosis. On this plan Dr. G. A. Johnson will take the cornstalk disease, and Dr. Morse will take operations on the sciatic nerve for the cure of spavin. Others will be solicited.

Dr. W. L. Williams read a very valuable paper on "Odontomes," and illustrated his paper by exhibiting many specimens of the several varieties of tooth tumors.

Dr. Brown's paper on the "Uses of Electricity in Veterinary Medicine," was postponed one year by special request.

Dr. G. A. Johnson read a paper on the cornstalk disease.\*

Dr. S. B. Nelson presented a few notes of cases on the use of eserine.\*

Dr. Edwards presented a paper on a disease known by some as scrofulous ostitis\*.

These papers were discussed at considerable length by all the members.

The following officers were selected: President, L. A. Thomas; First Vice-President, A. B. Morse; Second Vice-President, G. A. Johnson; Secretary and Treasurer, S. Stewart.

Moved by A. B. Morse, seconded by M. E. Johnson, that Dr. W. L. Williams be tendered a vote of thanks for his valuable paper and be elected an honorary member of this Association. Carried by unanimous vote.

On motion a vote of thanks was tendered the proprietors of the Savory House for the use of its parlors.

On motion a vote of thanks was tendered Drs. Thomas Morse and Howell for the clinical demonstrations given the Society.

Adjourned to meet in Des Moines during the autumn of 1891, the time to be fixed by the President.

S. STEWART, *Secretary*.

#### MASSACHUSETTS VETERINARY ASSOCIATION.

The regular meeting of the Massachusetts Veterinary Association was held at 19 Boylston Place, Boston, Wednesday evening, November 26th, 1890, President Thomas Blackwood in the chair. The members present were Drs. Blackwood, Emerson, Ferguson, Hadcock, Howard, Marshall, Winchester, Billings and the Secretary. Honorary member—Dr. Stickney. Essayist—Dr. E. C. Becket.

Minutes of last meeting read and accepted.

There was no new business; the next in order was the reading of a paper by Dr. Becket upon "Surgical Treatment of Recto-vaginal Fistula."

The paper consisted chiefly of the notes of two cases of recto-vagina fistula treated at the Harvard Veterinary Hospital, on Village Street. The essayist said that the cause was generally parturition, and was often complicated with rupture of the perineum, including a portion of the sphincter ani. He then described the two cases referred to above; both were complicated with tear of the perineum, although one was much worse than the other. They were much benefited by treatment, the fistula being closed, but it was impossible to bring about repair of the sphincter ani in either case; consequently in going down hill the gut would fill with air until they had a bloated appearance, and this would pass off on level ground, together with more wind, rendering them disagreeable to drive. The treatment consisted in freshening the edges of the opening between the rectum and vagina and bringing them together with sutures, silver wire being mostly used. It was found best to operate by throwing the mare and then etherizing; the animal when under the influence of ether relaxed the parts and thus rendered them more accessible. The intestines should be as empty as possible before operating, and kept quiet as long as possible afterward to avoid disturbance of

\*Will be published in the February REVIEW, having reached our office too late to be placed in this issue.



the parts by the passage of fœces, Both cases required to be operated upon two or three times before success was attained, and then it was only partial on account of the torn sphincters. The essayist thought that in cases of recto-vaginal fistula where the perineum or sphincter was not injured, treatment would be successful.

The ensuing discussion followed the reading of Dr. Becket's paper.

Dr. Winchester said that he had seen a few cases of recto-vaginal fistula, but all were in mares worth from \$2.50 to \$10. 00, generally in the hands of cheap traders. He had tried operating, but with very little success. He spoke of Becket in his paper writing that the wall of the fistula was treated as one tissue, while anatomically it was two; why would it not be better to try and separate the two walls and sew each one by itself? Dr. Winchester appreciated the difficulty of doing this, but why would it not be doing the work more correctly to sew the rectal and vaginal walls separately?

Dr. Howard thought that in an old lesion it would be almost impossible to separate the walls of the intestine and vagina.

Dr. Marshall moved that the essayist be accorded a vote of thanks for his paper; seconded; carried.

Moved by Dr. Winchester and seconded by Dr. Hadcock that the Secretary cast one ballot for Dr. Becket's admission as a member of the Association. Carried. Dr. Becket was accordingly elected.

Dr. Ferguson spoke of a case of deafness in a horse caused by firing a carbine close to his head. Blistering around the base of the ears was first resorted to without success, then treatment by electricity was tried, with successful results in the course of a week.

Dr. Hadcock reported a case of rabies in a horse belonging to the West End Street Railway Co. In August last a dog ran into a blacksmith's shop at Mt. Auburn and bit a dog and the horse. Both dogs were killed at the time and the horse worked as usual until within a few days, when he began to show symptoms of rabies, soon becoming very violent and dying in less than twenty-four hours of the time when the first symptoms were noticed. The horse died in just three months and sixteen days from the time he was bitten. The brain and a part of the spinal cord were removed and sent to Dr. Jackson, at the Harvard Medical School for the purpose of inoculating some rabbits, in order to confirm the diagnosis of rabies.

A general discussion of rabies followed, in which Drs. Marshall, Stickney, Winchester, Ferguson and Billings took part.

Dr. Billings said that he was very skeptical about many cases we call rabies being rabies, and said that he did not believe in the rabies of Pasteur. He said that he had no faith in Pasteur after he persisted in keeping the "Newark children" among his statistics of patients treated after being bitten by a rabid animal, when he had been informed that the dog which bit them never had rabies. He then spoke of his rabies among cattle in the West, in which he separated a germ that would again produce the disease, but it was not altogether like rabies after all. Dr. Billings will not believe in the work done on rabies until the disease is produced by inoculation in dogs, and the dogs produce the disease in other dogs by biting them. He is also very skeptical as to the value of inoculation against a disease which has always been fatal, with no history of recovery and non-occurrence.

Dr. Winchester was appointed a committee of one to attend to inviting Dr. Van Schaick, of the Pasteur Institute in New York, to be present at one of the meetings of this Association this winter, and give an address upon Rabies.

A motion was made, seconded and carried, that we omit the December meeting, as the forth Wednesday in December this year would bring the meeting on Christmas Eve.

Meeting then adjourned.

AUSTIN PETERS, *Secretary*.

#### LONG ISLAND VETERINARY SOCIETY.

A regular meeting of the Long Island Veterinary Society was held on Wednesday evening, December 17th, 1890, at No. 74 Adams Street, Brooklyn, the President, Dr. Geo. H. Berns, in the chair.

The following members were present: Drs. Geo. H. Berns, Geo. F. Bowers, J. F. Mustal, Philip Newman, Thos. M. Buckley, Samuel Atchison, D. S. Breslin, Wm. H. Pendry, Roscoe R. Bell, Geo. G. Vanderveer, Chas. Jamieson.

The minutes of the previous meeting were read and approved.

The Treasurer, Dr. Geo. F. Bowers, read his report for the term ending January 1st, 1891, the report showing a balance of cash on hand \$44.83.

The report was received and adopted.

The Board of Censors and the Board of Trustees had no report to make.

Dr. Wm. H. Pendry, was instructed to file the yearly report of the Society's condition in the County Clerk's Office, thus complying with the law on the subject.

The next order of business being reading of papers, Dr. Wm. H. Pendry read an interesting paper entitled "Uniform Standard of Veterinary Education." \*

An interesting discussion followed, participated in by Drs. R. R. Bell, Geo. H. Berns, J. F. Mustoe, Geo. F. Bowers, Thos. M. Buckley, and Wm. H. Pendry, after which a hearty vote of thanks was tendered the essayist.

The election of officers being next in order, the following gentlemen were elected to the various offices for the ensuing year; President, Dr. Roscoe R. Bell; 1st Vice President, Dr. Samuel Atchison; Treasurer, Dr. Geo. F. Bowers; Secretary, Dr. D. S. Breslin; Board of Censors, Drs. Geo. H. Berns, Philip Newman, H. Housman, Thos. M. Buckley, J. F. Mustoe.

Bill for typewriting, stationary and postage amounting to \$4.10 was ordered paid. A vote of thanks was unanimously tendered the retiring officers, particularly President Geo. H. Berns, for his efficient services in behalf of the Society.

The chair appointed as assaist for January meeting, Dr. Geo. G. Vanderveer.

The meeting then adjourned.

D. S. BRESLIN, D.V.S., *Secretary*.

#### INDIANA ASSOCIATION OF VETERINARY GRADUATES.

The annual meeting of this Association will take place at Indianapolis, on the 7th and 8th of January, 1891. Some interesting papers are promised.

\*Received too late for this number, but will be printed in next issue.—ED.

# AMERICAN VETERINARY REVIEW,

FEBRUARY, 1891.

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## EDITORIAL.

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HUMAN AND VETERINARY MEDICINE IN THE UNITED STATES.—Progress and status of the veterinary profession—which are due to the united efforts of its members—and its intrinsic value—the resulting foundation of schools—the obligations imposed upon such as science advanced—societies organized—importance of the work at their meetings—veterinary press was started—its success and usefulness—and yet how peculiar the conduct of the human medical profession—how veterinary graduates are treated by human medical organizations—how veterinary bodies act towards their medical relations—why?—the difference between this country and Europe. EDITORIAL NOTICE.—Our crowded pages—prospective increase in the size of the REVIEW.

HUMAN AND VETERINARY MEDICINE IN THE UNITED STATES—The veterinary profession has in no respect fallen behind in the rapid march of development and expansion in which every branch of science, art and discovery has participated within the past thirty years. Nor can any one who intelligently compares its former status with the progress it has made and the rank which it now justly claims and honorably maintains among learned organizations, fail to appreciate the amount of labor which it has cost to achieve its present position, so creditable now and so largely promising of still better things to come.

Perhaps the most remarkable feature of this notable growth and success lies in the fact of its recognition and utilization by members of the profession themselves, who have been forward and zealous in their acknowledgment of the importance and extent of the field of veterinary science and the

value of the services for which the community is its debtor. It is, in fact, to this alone that the credit is due for the recognition of its claims and the acceptance of their justness which has been secured, not only from the people at large, but on the part of the General, as well as of many of the State Governments. Its own honest self-assertion has compelled acquiescence from others.

It was, indeed, by the profession itself that the necessity for the organization of schools of more thorough equipment and enlarged capacity than had hitherto existed, was first felt and comprehended, although only the more thoughtful and experienced could realize what a labor of love and expenditure of hope and patience it would cost to raise them to the standing they hold to-day. And now that the most ample means and appliances for imparting an improved education have gradually accumulated and enforced their own adoption upon both those who teach and those who seek to be taught, we may honestly boast of institutions which may be advantageously compared with any of their kind on this continent, if not even with those of old Europe.

Veterinary graduates becoming thus by degrees possessed of a higher education, and the superiority of their qualifications being discovered and felt, their services become of greater value, and the masses begin to appreciate them better. Specialists in veterinary medicine exist, it is true, but their pretensions and the extent of the ground covered by their specialties are without significance or importance. No man can possess an exclusive or patent-righted knowledge in any distinct or peculiar branch of the practice of medicine. A competent practitioner must possess a familiar knowledge of the science as an entirety, even to become exceptionally expert in one or more of its branches. Graduates of veterinary medicine do not restrict their studies by any limitations of subjects; but realizing that their profession is a progressive one, and knowing that to keep abreast with the times they must take advantage of every help which offers itself capable of facilitating their work, they have organized associations, and there is to-day no State of any importance that has not one, and, in a few instances, more veterinary societies, with

their instructive and entertaining monthly, semi-annual and annual gatherings for the discussion of papers upon scientific topics. Further to exchange their ideas and to develop their opportunities for the acquirement of information, veterinary journals were created, and comparatively speaking, these have proved successful and useful.

All this, and more has been accomplished by veterinarians, and yet with all this, why is it that our branch of the science of healing has failed to receive, from those to whom it has a right to look for help, the slightest favor or encouragement? Why are the doors of many of our medical schools and almost all of our medical societies, almost literally speaking, closed to-day to regular graduates of veterinary medicine? Let us further explain what we mean :

A regular veterinarian graduate, recently out of school, desires to obtain the degree of M.D., and applies to one, a regular medical institution. He inquires as to the requirements for graduation, asks if any time will be allowed to him for his previous (recent) studies. And in a majority of the schools—(and we mean here to include some of the best in the country) what is the answer? “We cannot allow anything more than the time of study.” It is to take it or leave it. The graduate had studied medicine one year before entering the veterinary college; he had given two or perhaps three years, or perhaps more, to that college; he had studied faithfully under good teachers; he had mastered thoroughly all the *general principles of medical science*, but the medical teachers declined to recognize any and all of these facts, and why? Is not this grossly unjust; does it indicate a proper appreciation of the work performed by the veterinary faculty?

Again, let the veterinarian make an application for admission to a medical society on the strength of his hardly-earned diploma as a veterinary surgeon. How will he be received? Of course he can attend the meetings; he may perhaps bring specimens; perhaps he will be permitted to participate in the discussion; he will, no doubt, be treated and received as a gentleman—but for any of the medical privileges of the society, they will be perhaps courteously, but peremptorily denied him. Again, why?

Is not such a state of affairs deplorable, and has not the time come for the medical profession to accord to her veterinarian brethren (or are they peradventure only cousins, if not some still more "distant relation?") the rights and privileges which they themselves concede to their elder relations? for it is a fact that when graduates of recognized medical schools are admitted to veterinary colleges, full allowance is made for the time occupied in previous studies, and their term correspondingly reduced. Moreover, graduates of medicine in good standing are admitted to membership in federal, state and city veterinary societies. Does it not seem eminently proper that here at least, there should be reciprocity? It could not be other than mutually beneficial to both sciences, and it would be of advantage to all who look for thoroughness of education. It would contribute to the elevation of veterinary as well as of human science, and would at the least assist in the removal of any little stigma which may continue to be attached to the professional and scientific standing of the veterinarian.

The rights and immunities which we are claiming as justly due to veterinary surgeons in this country, have existed for years in Europe, and have received of late an additional recognition by a recent decision of the French Government, entitling all graduates of veterinary medicine possessing the degree of Bachelor of Letters or of Sciences, to special privileges in their admittance to the medical schools, and in the conditions of graduation.

EDITORIAL NOTICE.—We have received from several correspondents important communications, original articles, reports of cases, etc. that we find impossible to publish in this issue. We hope that the condition of our crowded pages will be an acceptable apology for the present, and that by an increase in the number of reading pages, which we intend to effect in our next volume, (April, 1891), we will have no more occasion for the further postponement of whatever communications our friends and correspondents may send us; at the same time we assure them all of our sincere appreciation of the kind assistance they give us.

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## ORIGINAL ARTICLES.

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### CORN-STALK DISEASE.

(A Paper read by G. A. Johnson, V.S., at the Annual Meeting of the Iowa State Veterinary Medical Association.)

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*Mr. President and Gentlemen:*—It is nearing that time of the year when our offices are frequented by farmers who are anxious to learn or ascertain if the veterinary profession has learned anything new relative to the cause of the yearly loss of stock when it is first turned into corn-stalk fields to graze. And how few of the veterinarians have ever taken any pains to investigate the cause of this trouble, or even keep up with the progress that has been made, though slow, as the investigations have been carried on by a few veterinarians, whom the old theory of “one hour a day in the field, with plenty of water and salt,” did not satisfy.

And what a large majority have been contented to rely on works written in England—where corn does not grow, and consequently the trouble can not exist—for the pathology and treatment of this disease, and as a result have advocated and treated according to the old, dry, American theory, a theory that is supported by *only one* pathological lesion, *i. e.*, a dry and impacted condition of the third stomach—a condition which Professor Williams claims is natural in all cases of obstinate constipation in rumens. (*Principles and Practice Vet. Med.* p. 424). And this impaction is often found by later investigators to be absent; although the contents may be dry and hard, there is very rarely any engorgement.

But the pathologist finds that this affection of the third stomach is not the only lesion that is usually found, but that the viscera is more or less affected, a fact that usually escapes the eye of the uneducated.

During the outbreak of this disease that occurred in Soc Co., Iowa, in the fall of 1889, the majority of the cases did not live more than six hours, and many not more than two hours after they first showed symptoms of the disease, and all

deaths taking place after the cattle had run in the stalk fields six days or longer.

The first symptom that the majority showed was a drowsiness, that soon passed into coma and then lethargy, with paralysis of the sensory nerves and stertorous breathing. One man reported that his cattle became rabid in action and would pursue any moving object, especially man, but this stage soon passed into that of coma, and death soon came to the relief of the suffering animal.

As typical of what was usually found on post-mortem, I will give the results of one that I held. The cow was destroyed after having lain about six hours, being then in the last stage of death.

Blood dark, with slight tendency to clot; had very much the appearance of strong, unsettled coffee; microscopical examination showed a shriveled condition of the red corpuscles, much as though the blood had been subjected to the action of acetic acid.

Heart: valvular structure of left side inflamed, those of the right side very slightly.

Lungs: right slightly congested, left filled with dark colored blood; was unable to tell whether it was due to the disease or from stagnation, the animal having lain on this side.

Spleen enlarged, of a dark color and showed more or less congestion, and of a broken down appearance.

Liver: anterior lobe much enlarged, posterior slightly. Interior face along the blood vessels covered with a thick (from one-half to one and one-half inch), straw colored organized exudate, interior superior border much inflamed, with the capsule broken and the tissue of a broken down appearance.

Gall bladder well filled with straw colored bile.

Kidneys: left normal, right corticle portion inflamed.

Rumen well filled with moist aliment.

Omasum filled with dry material; walls of the folds showed much inflammation; mucous membrane separating from the walls and coming away with the aliment, but there was no engorgement.



Large and small intestines appeared normal.

In another case that presented similar symptoms and lesions, the omasum contained but a small amount of moist aliment.

And in nearly one-half of the post-mortem examinations that were reported to me, there was no impaction or dryness of the omasum.

From the above I see very few symptoms or lesions to induce one to believe in the impaction theory, for I cannot conceive of a case of death as a result of impaction, when the post-mortem examination reveals the fact that there is no impaction or even dryness.

But let us compare the symptoms of this affection with those of impaction as observed at other times of the year.

IMPACTION.	CORN-STALK DISEASE.
No period of incubation.	An apparent period of incubation of from six to fourteen days.
First symptom loss of appetite.	First symptom either drowsiness or delirium.
Viscera seldom complicated.	Viscera usually complicated.
Rabid symptoms usually present.	Rabid symptoms frequently absent,
Blood normal.	Blood affected.
Impaction of omasum always present.	Impaction of the omasum often lacking.
Recovery frequent.	Recovery rare.

Thus we see that there is a different line of symptoms developed, as well as different pathological lesions, and the question naturally arises at this point, does the season and the feed account for these differences?

To the casual observer they do not, consequently we must look to something else as the cause. And as to just what that cause may be, there is as yet some doubt, yet Dr. F. S. Billings claims to have discovered the cause in a germ, whose natural host is the Indian corn-plant. As early as 1881, Prof. Foster, of Illinois, discovered this parasite of the corn, which was later and further investigated by Prof. Burrill of Illinois, so that now there is no question about there being a germ parasite of the corn plant.

In 1889 Dr. Billings claims to have eliminated a germ

from pathological specimens taken from a cow that died on the farm of Mr. Delany, of Fremont, Neb., which was identical with the Foster germ, and so recognized by Prof. Burrill.

With pure cultures of this germ Dr. Billings inoculated rabbits and guinea pigs, which died presenting symptoms and pathological lesions similar to those seen in cattle that die after having been turned into corn-stalk fields to graze.

Thus we see that Dr. Billings has presented a strong case in his works alone, but further facts go to strengthen the germ theory as follows :

First, that there is usually a period of six to fourteen days after the cattle have been turned into the stalk-field before any deaths occur, which appears as a period of incubation.

Second, that the pathological lesions indicate the work of a germ, *i. e.*, by the affection of the blood, as well as the whole viscera—in fact, the lesions, etc., all point to septi-cæmia.

Third, short duration of the disease.

Fourth, the affection of some fields and not of others, as in the case of Mr. McKilvie, of Fairfield, Neb., who had a forty acre field affected, and lost cattle in it before and after their having run in other fields. (See Billings' Bulletin of Neb. Experiment Station).

Fifth, the young cattle are the ones that are usually affected, indicating that the older ones may have suffered a slight attack which, though unnoticed by the owner, produced immunity against another attack.

Sixth, the malignant character of the disease.

Having thus presented a few of the facts that tend to prove or strengthen the germ theory, I will now review some of the reasons that go to *prove* the impaction theory erroneous.

First, the many cases where there is no impaction and very little dryness.

Second, the cattle becoming affected in one field often having pastured for some time in other stalk fields.

Third, the eradication of the disease which often follows the changing of the stock from one field to another.

Fourth, that graded feeding to start with does not prove a preventive,

Fifth, that the supply of salt and water exerts no influence as a preventive, for in the majority of cases in this State, the farmers have good water supply and usually allow the stock all the salt it will eat.

Sixth, that the disease does not often occur during the first five or six days after the cattle have been turned into the field, as one would expect was it simple impaction.

It seems to me that in the face of the above facts in the case one should hesitate a long time before they could be reconciled to the old "one hour a day in the stalk-field, with plenty of salt and water" theory of impaction, as being the sole cause of this disease.

That the theory is new and that much remains to be investigated or rather proven by investigation is evident to all, yet I trust that the stone has been started rolling and that it will gather the moss of knowledge of the subject very rapidly.

Dr. Billings was uncertain about the ear of the corn being affected, but later Prof. Burrill demonstrated that it is often affected, and when affected it has a mildewed or mouldy appearance, and I am of the opinion that it is the greatest source of the disease, for usually the mouldy corn is left in the field by the gatherer, and when stock is first turned into a field they do not eat much of the fodder, but search out and gather up most of the grain, including the mouldy ears left by the gleaner, thus taking into the system such quantities of the germ as to result in speedy and certain death.

Treatment medicinally is nearly always useless, as the animal is too seriously affected when first seen, yet much may be accomplished by preventive measures, such as follows: First, gather all mouldy grain; allow the stock to run in the field but a short time each day, as the system may be strong enough to throw off the effects of the germ when introduced into it in small quantities. Should any present the symptoms of the disease, remove all the stock from the affected field. Observe all good hygienic rules. Ounce doses of soda hyposulphite three times a day might fortify the system so that it would throw off the germs.

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## CASES IN PRACTICE.

BY FRED. EDWARDS, V.S.

(Read at the Annual Meeting of the Iowa State Veterinary Medical Association.)

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Gentlemen. It is a pleasure to accept the privileges of this Association. I offer the following notes of cases which have occurred in my practice during the past year, and which I trust will be of interest. Before describing these cases, which are all of the same character, I would like to state that rather than make a mistake in my diagnosis before a body of practical men, I have left the nomenclature to you and trust you will enter into a thorough discussion.

Case 1. A bay mare, age three years, convalescing from an attack of strangles. Convalescence was interrupted by the occurrence of a certain set of symptoms which were not understood by the owner, and I was called to see the case April 1, 1890. I found the animal presenting the following conditions: normal pulse and temperature, good appetite, constipated bowel, very fœtid breath, marked loss of the sensibility of the skin, partial loss of the power of co-ordination, which was much aggravated upon excitement. She moved forward with a staggering gait, making a more or less irregular line of progression to reach any desired point. She walked in a stamping sort of way and when in the act of lying down seemingly lost all control of her muscles after reaching a certain point and went down precipitately or all in a heap, so to speak, not being able to get up again without assistance. She was unable to urinate, although constantly making efforts to do so, a condition which persisted to the termination of the disease. By the use of a catheter the bladder was relieved of a moderate quantity of highly colored urine.

Not being familiar with the disease and finding no description of it in my library, I did what most men do in such circumstances—treated the symptoms. Gave oleum lini  $\text{O}i$  at one dose and fl. ext. ergot and fl. ext. belladonna aa  $\text{ʒ}i$  every six hours; also applied a blister over the spine. Frequent reports from the owner informed me that the animal was getting no

better but worse, and I made a second visit May 14th. The patient was in a deplorable condition. Emaciation quite extreme; large bed sores covered every bony prominence exposed to pressure; the left eye seemingly atrophied and sunken deep in its cavity, its power of vision destroyed; appetite still good.

Patient died May 18th. Post-mortem examination showed no disease of tissues except as hereinafter noted: slight inflammation of bladder, atrophy of the posterior portion of the spinal cord. The atrophy was so great that one would not recognize the tissues as the remains of a spinal cord, except by their position.

Case. 2. Black mare, age three years, presenting symptoms similar to case 1, but of lesser degree and had been ailing for four or five weeks. Her dam was old and blind and was the dam of two other colts older than this, which were afflicted in a similar manner, one of which recovered, the other died. No previous history of strangles. Saw this case May 22d; prescribed same treatment as in case 1. At the end of one week the owner reported the case better and was advised to continue treatment and put animal on pasture. June 2d the mare was found dead. Post-mortem examination in this case found atrophy of the cord posterior to the middle dorsal region; in fact it seemed to terminate at the point named. The hilum of the right kidney contained a round worm about two inches long, to which the owner of the horse ascribed all the symptoms in this case. No other conditions found worthy of note.

Case 3. Bay mare, age three years, examined June 16th. Found her eating and in general appearance a well animal. Anæsthesia of the skin was quite marked; imperfect locomotion had been noticed for several days past and owner said "she had been horsing two weeks," bowels constipated, pulse and temperature normal. Gave aloe ball and fl. ext. belladonna to be given in 13 doses three times daily. June 19th motor inability increased; would stand braced for hours, lest it fall in an attempt to move; unable to rise without assistance. Continued the belladonna treatment. Subsequent reports in-

licated decided improvement; she was turned to pasture when able to walk steadily and the owner reported her well Sept. 8th.

Case 4. A filly, six weeks old, had not been able to walk right for several days when owner called me Aug. 15th. Upon entering the barn the colt (a much petted foal) attempted to come directly to us. She kept her head toward us but the posterior part of the body reeled to the right and compelled the animal to stop and brace its limbs to prevent falling. After several efforts it reached us. On its return to the dam it fell and was unable to get up although it made several attempts. The dam was milked and the milk given to the foal, which drank it with apparent relish. It soon became excited and apparently tried to micturate, but without success. Gave oleum ricini  $\frac{3}{4}$  and small doses of pot. brom. to be given during excitement. Anæmia, anæsthesia of the skin, faintness and blindness of the left eye soon developed. The owner finally shot her. Post-mortem examination showed atrophy of the posterior portion of cord, which resembled a tape measure more than a spinal marrow. The walls of the external iliac arteries seemed thickened; other parts normal.

Case 5. Trotting bred colt, two months old, beside its dam in pasture field. When seen by me Sept. 9th owner said "he thought it had fallen off considerably for a couple of days past." Ordered the colt taken to the barn about a quarter of a mile distant. While attempting to follow its dam it continued to stagger to the right and would have fallen into the fence had it not been assisted. Sometimes it would stamp the ground instead of moving forward, and even fall. With assistance it reached the barn much exhausted. When down it continually struggled to rise; had erection of penis, and appeared to be enduring severe pain. The next morning the anterior limbs were paralyzed, the left eye considerably sunken and nearly blind, severe pains recurring at intervals. This colt died the afternoon of the 12th—three days after the first evidence of sickness. All the structures appeared normal on post-mortem examination excepting the spinal cord, which was almost obliterated forward to the cervical regions.

These are all the cases of this kind which have come under my immediate notice, but I have heard of several similar ones in or near Tipton, which have terminated much like my cases.

From these I have formed the following conclusions:

1st. This disease attacks young animals only and might be called a disease of growth.

2d. That females are more susceptible to this malady than males.

3d. Hereditary influence plays some part in the susceptibility to this disease.

4th. This disease simulates several others, but can be distinguished from each. They are scrofulous ostitis (omphalophlebitis) motor paralysis, spinal meningitis.

It differs from scrofulous ostitis in there being no pervious urachus, the power to micturate being present in one and absent in the other.

It differs from motor paralysis in there being a loss of co-ordination and gradual loss of motion rather than sudden and complete parasis.

It differs from spinal meningitis in the absence of pain consequent upon motion or concussion of the spinal vertebræ, the absence of febrile disturbances. The ocular symptoms and the clinical history are quite different.

Gentlemen, these are my cases and my deductions. You may readily make a diagnosis; I find it a difficult task.

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## NOTES ON THE SULPHATE OF ESERINE,

BY S. B. NELSON, D.V.M.

(Read before the Iowa State Veterinary Medical Association).

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*Gentlemen:*—In reponse to a request by your Secretary I have collected a few clinical notes on eserine, for presentation to this honorable body.

It has been advocated by some writers that eserine sulphate caused copious watery dejections in the horse, and as my experience has not confirmed this theory, I wish to call

your attention to that point in particular. I do not think this drug is a hydragogue cathartic, and cite the following notes for my reasons. It will be understood that this drug is always given in solution hypodermically whenever its use is mentioned.

Its action in these cases was an exalted stimulation of the peristaltic power of the intestinal tract and more especially of the colon.

Case 1.—A chestnut gelding, weight about 1050 lbs. sick with colicky pains and constipation. Had been sick several hours when he was brought in for treatment at 8 P. M. Was given a liberal dose of chloral hydrate and also sodium sulphite, which gave him relief from pain. No fæces passed from him during the night. The following day he received two or three doses of magnesium sulph., and copious injections of warm soapsuds. 7 P. M., the horse did not complain of pain, had not discharged any fæces. Was given one grain of eserine, which was followed by several liberal discharges of quite dry fæcal matter. The patient made a good recovery.

Case 2.—A black gelding, weight 1400 lbs., used by an express company, was brought to hospital at 8 A. M. This horse had probably been sick all night, as his evening ration was not all eaten. He had severe colicky pains and was given chloral hydrate  $\text{℥} 1$ , oleum menthi piperita  $\text{℥} 1$ , sodium sulphite  $\text{℥} 2$ , which gave temporary relief. 10 A. M. the dose was repeated and soon followed by 5 grains of morphine hypodermically. There was no flatulence, and careful rectal examination discovered the rectum and colon to be quite empty and flaccid. Injections of soapsuds increased the distress, which gradually became intense. At 2 P. M. the horse was completely anæsthetised with chloroform, but upon recovery from the effects of this drug the pain returned. Acting upon the theory that the pain was caused by intestinal obstruction, one grain of eserine was administered, and repeated in 30 minutes, which resulted in a great increase of pain with violent efforts to defecate, but nothing passed the sphincter ani. The patient soon became delirious and remained so until he died at 10 P. M.



Case 3.—Bay gelding, weight about 1200 lbs., had been sick all day with indigestion, followed by flatulency and impaction of the colon. Was called at 6 P. M. Anodynes and oleum were administered, which controlled the pain, and frequent copious injections of soapy water were made into the rectum during the night and following morning, but the impaction was not relieved. At 1 P. M.  $2\frac{3}{4}$  of glycerine was injected per rectum and one grain of eserine under the skin. Within twenty minutes a dry mass of fæces was discharged and was quickly followed by several musky discharges. Patient made a slow recovery.

Case 4.—A small spotted mare admitted in hospital at 3 P. M. suffering with severe colicky pain, slight flatulence and constipation. The pain and flatulence were relieved by chloral hydrate and soda sulphite; warm ænemas were given but not retained; no fæces came away with the water. 10 P. M. one grain of eserine was given, and two or three large fæcal discharges soon followed. At 11 P. M. the dose of eserine was repeated with a like result, the last discharges being quite soft. The case recovered.

Case 5.—A small bay mare having impaction of the colon accompanied with quite severe colicky pains. Relief from pain was soon obtained by two-dram doses of chloral hydrate, but injections of water did not relieve the loaded colon. The case rested easy during the night. Injections of water were given in the morning, but did not produce the desired result.  $1\frac{1}{4}$  grains of eserine induced some pain and a copious fæcal discharge every few minutes during the succeeding hour. Case recovered.

Case 6.—A bay gelding admitted to hospital at 4 P. M., having slight colicky pains, which were relieved by two-dram doses of chloral hydrate. There was no fæcal discharges during the night, but after a return of the pain at 7 A. M.  $1\frac{1}{4}$  grains of eserine was given, which was followed by four or five evacuations of mushy dung. The patient recovered.

Case 7.—A large grey stallion, very colicky and tympanitic when brought for treatment at 5 P. M. Chloral hydrate, morphine and aloin were given and the flatulency relieved with a

trocar. The following morning found this horse in considerable pain and thoroughly distended with gas. The trocar was used again and  $\frac{3}{4}$  grain of eserine given. There being no effect discernable at the expiration of 20 minutes, the dose of eserine was repeated, which was promptly responded to by several discharges of dry fæcal matter. The eserine caused considerable pain, which was allayed with morphine. This horse recovered.

Case 8.—A brown gelding was noticed to be ill sometime during the afternoon and when examined at 5 P. M. the case was diagnosed spasmodic colic. Anodynes were administered and rectal injections of warm water given several times during the night. Flatulency developed during the night and had to be relieved with a trocar, the injections failing to secure the evacuation of the contents of the colon. The injections were continued at intervals until the end of the second day, or nearly 48 hours, but without producing the desired result. The trocar was used to relieve the recurring tympanitis. One grain of eserine was injected, which was soon followed by a free discharge of flatus and some dry fæces. 40 minutes later one-half grain of eserine was given with a repetition of the before-mentioned results. Case recovered.

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## NAVICULAR DISEASE AND NEUROTOMY.

BY PROF. A. H. BAKER, V. S., Chicago, Ill.

(A Paper read before the Illinois State Veterinary Medical Association).

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It may seem presumptuous in me to offer anything for your consideration on so hackneyed a subject as navicular disease and neurotomy, but I will endeavor to present a few points on the subject, that will, I trust, evoke some discussion.

Under the name of navicular disease we have a lameness very often met with, and one that is apparently on the increase in this city, and more or less in the country, with a variety of causes, more or less characteristic symptoms, and incurable except by neurotomy. After nail-pricks and corns this is the one most often seen.

The parts involved are those forming the navicular joint ; viz., the plantar aponeurosis or expansion of the perforans tendon where it passes over the navicular bone ; the posterolateral ligaments, including the elastic fibrous cord that forms the complementary cushion of the navicular bone ; the anterolateral ligaments ; the interosseous ligaments ; the synovial membranes ; the nerves supplying the region ; the navicular bone ; and in some cases, more or less all surrounding parts. The morbid anatomy developing in these tissues depends somewhat upon the severity of the cause, but more upon the age of the case.

The causes that I wish to bring to your notice and consideration are concussion and rheumatism. The fore feet of a horse are intended more to carry the body than to propel it, and the higher action of them is conducive to more bruising than is ever seen in the hind feet. This bruising produces a subacute inflammation in some of the tissues of the navicular region, which induces a favoring of the affected foot ; this leads on to contraction of the hoof, and if the horse is kept at work it will run into a confirmed case of navicularthrititis, with all of the symptoms and morbid anatomy that are so well known to you, as existing in old, useless cripples of this kind.

Rheumatism may attack the nerves of the feet, owing to their great exposure to cold and dampness, and more especially when sore from previous bruising, which I think will account for its prevalence in the fore and its rarity in the hind feet. The rheumatic complication tends to confirm the case, and gives rise to some peculiar symptoms seen in the early stage of the disease, and plays an important part in the subsequent development of the more extensive and severe form that leads on to complete crippling of the horse. The bruising of the navicular tissues may occur from long continued pounding on hard smooth road, such as our boulevards and race tracks, and accidental pounding of the frog upon cobble stones, car tracks, etc.; then when there is a rheumatic tendency in the animal the rheumatism always locates in the sore part. The early symptoms are obscure, and when not understood, make the case a very puzzling one to locate, but when one is famil-

iar with them they are quite diagnostic. A horse in the incipient stage will have intermittent lameness, usually at first very slight; he may go out a little sore and soon warm out of it; he may go out sound and go slightly lame after going a few miles, which may last only a few minutes, or until he gets home. This may last a few days and pass off and he will go all right perhaps for a month, when it returns, oftentimes suddenly when driving. The foot in this early stage is usually cool, there is no pointing to rest it, the shoe is worn evenly, but close observation will notice that he puts that foot down more lightly than the other; this is more noticeable when trotting slowly on a floor, when the sore foot will make less noise than the sound one. When standing he will raise the weight partly off that foot by contracting the muscles of the shoulder and arm and slightly straightening the pastern. As the disease develops this will be more marked, the heels may feel warmer than normal, the foot grows smaller from month to month, the soreness is more marked when starting out, but will usually disappear after going a couple of blocks, and will be still more so when starting after standing for half an hour. He will now wear the shoe more at the toes and will occasionally stumble. At first no tenderness will be perceptible under percussion by the hammer, but as the above condition develops there will be increasing sensitiveness from week to week. To draw out an expression of pain rap quite heavily on the frog with a hammer of medium weight. When these symptoms are sufficiently developed to render the diagnosis certain, it is incurable or nearly so. Blistering the coronet, removing the shoes and giving a long rest at pasture will temporarily relieve it, but when brought in and put to work again he will soon go lame the same as before, gradually at first but constantly growing worse. We try tips, or pads giving frog pressure; he goes worse on them than on plain shoes, but raising the heels will give relief.

On account of unsatisfactory results from other kinds of treatment we recommend the low operation of neurotomy. The earlier it is resorted to the better. It may be done standing by giving the horse a moderate dose of chloral, applying

the twitch to his nose and flexing the leg across a chair, or lay him on a table, or cast him, apply tourniquet to the fore arm to prevent hemorrhage, make an incision just below the fetlock on the edge of the tendon, three-fourths of an inch long, take up the posterior digital nerve and excise an inch of it. Repeat the operation on the other side of the leg. Dress the wounds with an antiseptic lotion, bandage the leg to maintain the lips of the wounds in apposition and keep the bandage wet with the lotion till healing has taken place, which will usually occur by first intention. Leave the shoe on for a couple of weeks, then it may be removed and let him run out for a month, or shoe him with a light plain shoe, letting the heels down into their natural position.

These cases will go sound immediately after the operation, but may go lame again after a week or two from slight inflammation in the cut end of the nerve; this will disappear after a few days, also the heat in the heels, and the horse will go all right and do both fast and draught work satisfactorily with no unfavorable results. The high operation cannot be too strongly condemned, except in case of incurable ring-bone, for it deprives the foot of its nerve power, which leads on to degeneration, swelling, thrombosis, necrosis and death. The improvement in the foot after the low operation in my opinion is due to the removal of the sensation. This removes irritability, the parts return to their normal functions and the health of the tissues is largely restored. Cocaine in a three per cent. solution may be resorted to before the operation, by injecting a little over the nerve to prove the diagnosis, and at the time of the operation to deaden the sensibility.

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## UNIFORM STANDARD OF VETERINARY EDUCATION.

BY DR. W. H. PENDRY, Brooklyn, N. Y.

(A paper read before the Long Island Veterinary Society).

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In selecting a subject for your consideration this evening, I may possibly disappoint some of those who have a more practical turn of mind, yet the question submitted I consider

one of the most vital to the profession and deserving your full and most serious attention.

Some few years ago I tried, in a rough way, to bring about a discussion on veterinary education, but very imperfectly succeeded, for what reason I do not know. Perhaps it was that comments might have added a further blur to the poor opinion that many have of some graduates, whose very diversity of knowledge lends color to the impression that the common educational ability has a remarkably wide range. Why this condition of affairs? Why this silent taunt at so noble and so scientific a profession, whose field of usefulness and work has such an immense range, is hard to conceive. Doubtless the vast difference between an ordinary veterinary surgeon and an educated veterinarian is as yet beyond the comprehension of the general public. As a rule the one's usefulness is limited to his particular line; the other knows no bounds in the field of his profession, whose extensiveness lies beyond the imagination of an ordinary mind and can only be conceived by an ideal realization or a scientifically educated person.

How often do those who are loyal to their profession become disgruntled with their own knowledge and absolutely disgusted with that displayed by others! Do not imagine that I here intend to start out on a crusade against the different schools of this or any other country, in contending that this one or that one has turned loose those who have helped to germinate such an idea as the foregoing, yet I cannot refrain from saying generally that therein *may lie* some of the cause; still I consider there is a more direct cause, in that I believe that the existence of so many veterinary schools—and how many have sprung up within the last ten or fifteen years, either as an appendage to other institutions or even veterinary colleges dependent upon their speculative results,—has created a dangerous competition, and so much has this been the case that in many instances there has sprung up such rivalry that that very spirit if left alone, to run its own natural course, which lies so close to the crater that the slightest volcanic eruption might bring down such a shower of public contempt that the profession would be buried more deeply than Pompeii.

As I have stated, I do not wish to assail any particular school, but simply desire to deal with the question in a general way, yet it cannot be denied where one offers to produce graduates for a less fee and in less time; the latter being often of greater moment to the interested party than the actual cash paid down. There must be some difference in that which is tendered for a consideration, not but what I am perfectly willing to admit that there are exceptions even to this rule, as some seem more adapted to their calling, coupled with a desire to increase their knowledge at every opportunity; but this I claim is the exception and I am sure that a large majority of young graduates will answer—perhaps in silence—a conscious enquiry, is his knowledge consistent with a truly educated veterinarian? in the negative, yet so many are satisfied if after leaving school they can, under the shelter of a diploma, treat a punctured wound of the foot, a case of colic, or even diagnose a case of lameness, and there ends their ambition. Are such men true representatives of a profession that can be made one of the most scientific under the sun? Surely there must be times when such men feel within themselves and realize their inefficiency.

The writer is free to admit that many times he has exclaimed to himself that he did not know a thing, the last word being preceded by an emphasis that was somewhat unparliamentary, yet he is a reader and more or less studiously inclined. This is said with no reflection on his Alma Mater, for whom he has the most profound regard, but I do say without any hesitancy that the course as generally given in the colleges of the present day is not on a par with the importance of the profession. This is bad enough, but even this wrong is lost in insignificance when compared with a greater one—the desire to turn out large classes. When I speak so reflectingly I am not unmindful of the fact that in no country has the veterinary profession made greater strides than in the United States during the last twenty-five years, yet our success must not submerge our judgment when certain reformation is called for by reason of circumstances that might be attributed to such advancement, and which is born of a desire

to too quickly show results in too short a time. I realize that these views may be considered selfish by those who have limited means and time, who doubtless are making great sacrifices to join our profession with the determination to do it honor; such condition of affairs, brought about by such circumstances, finds no keener sympathizer than the writer and it is to such men that I would do honor by protecting the profession they have chosen by raising them and it to a higher plane. How is this to be done? My answer is, by having a uniform standard of education; and how shall that be accomplished? For a solution of that problem let me refer you to the proceedings of the United States Veterinary Medical Association recently held in Chicago. Not that the idea of a National Board of Veterinary Examiners was conceived there, it having been written upon and talked about years ago, but that it received its first serious consideration at the hands of a large representative body of veterinarians, and it is seriously hoped that the fruits of such conception will quickly come to light, and produce a healthier state of affairs.

Now comes the difficult part of the problem. What authority shall create that Board, and how great shall be its power? If the plan were only to be carried out in one State it would be much easier, but it would avail nothing if the movement was not a national one. The idea of having examiners appointed by the Department of Agriculture in Washington is undoubtedly a good one, yet I have no doubt that some will be afraid of politics creeping in, but safeguards could be easily thrown around such a Board by adopting the same plan that is employed in the formation of the Board of Elections; so far so good, but how about the conflict of State authority? Certain colleges in certain States have been invested by charter or otherwise with authority to grant diplomas and to create a National Board of Examiners, who alone shall have that authority, would conflict with State laws, yet if they cannot be deprived of this power I see no reason why a National Board of Examiners cannot be created to be known as the Veterinary College of America, whose function alone shall be to grant diplomas to such graduates of the dif-



ferent colleges who shall pass a post examination before them, the value of which would be so established that all others would soon become professionally obliterated.

No time should be lost in having a bill introduced in Congress creating such a body and investing them with authority to hold examinations twice a year, say one in Chicago for Western schools and in Washington for those in the East. I think such a bill would receive little or no opposition providing it did not directly deprive schools of the graduating power already invested in them.

The value of the profession to the nation has too recently been demonstrated not to receive the support of the government when it can be positively asserted that the success or non-success of the cattle industries of this vast country depend very largely upon the proficiency of its veterinarians, saying nothing about the relationship of the profession to public health in regard to the consumption of meat and milk.

I have not had the time to give this subject that it so justly claims, but short as this paper is and crude as the ideas and comments are I trust they will be the means of starting a discussion that may lead to something tangible.

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## THE RELATIONSHIP EXISTING BETWEEN HUMAN AND BOVINE TUBERCULOSIS.

By PROF. E. F. BRUSH, M.D, Mount Vernon, N. Y.

(A paper read before the New York Academy of Medicine, April 18, 1889).

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A strangely interesting phase of the study of phthisis is that presented by the disease in living beings. In the human race the afflicted are generally the most attractive members of society. Scrofulous females are usually among the most beautiful people we meet, with their transparent complexion and large, languid eyes, while the scrofulous males are either intensely intellectual or correspondingly erotic. The same rule holds good in the bovine race; the small inbred tubercular Jersey is in appearance the most attractive of any of the cow tribe, while even the common scrub cow that is tuber-

cular has a certain beauty that distinguishes her from her more robust sisters.

I know a famous animal painter who will always unconsciously select from a herd of cows the scrofulous one for his study whenever he makes a study of a single animal from a herd.

This is not the only strange feature of the disease. No one seems to be afraid of it. For years men of undoubted scientific ability have been proclaiming to the world the still hardly recognized fact that bacillary phthisis is contagious, but the human family take little heed. Furthermore, the individual, sorely afflicted, beyond human aid and shortly to die, is not convinced of the fact, but, with the same strange fatality that surrounds the disease in all its phases, the consumptive is still hopeful and imagines he is getting better even while he is dying.

This insidious and delusive disease is not the result of civilization, as many suppose. Barbarous and uncivilized races are afflicted as severely as many of the most advanced civilized races.

Neither geographical position nor climatic conditions are a factor in the distribution of pulmonary phthisis, notwithstanding that our best workers in the study of the disease attempt at times to account for its prevalence in certain localities by reason of temperature or other climatic conditions. Nevertheless, every known part of the globe, with a few isolated areas excluded, is a habitat of the disease.

After several years of close study of the affection, and consulting all accessible statistics and the habits of the people where the disease prevails, the only constant associated factor is found, in my opinion, in the inbred bovine species, without any regard to the social position of a community, its geographical habitation, terrestrial or atmospheric condition. If a community is closely associated with inbred dairy cattle, tuberculosis prevails.

This position which I take is susceptible of strong proof. In establishing my proof I will first draw your attention to some barbarous races of Africa. Speaking of the natives of

South Africa, P. L. Simmonds, in his book on "Animal Products," says:

"This people delight in horned cattle of the bovine species;" "the natives are great milk drinkers;" "these barbarous people suck the blood from the jugular vein of the living bullock," and also "churn together blood and milk for a drink."

Professor Low, in his "History of the Ox," tells us: "In the vast regions of Southern Africa, peopled by tribes of warriors and herdsmen, cattle abound and multiply, and form the wealth of little communities. The Hottentots, while yet they had a country they could call their own, were rich in this kind of possession."

In Hirsch's book on the "Geographical Distribution of Phthisis," we find the following: "In Cape Colony phthisis is oftenest met with among the Hottentots inhabiting the plains near the coast."

In proof of the fact that these African cattle are inbred, we have the writings of Anderson, quoted by Darwin, as follows:

"The Damaras take great delight in having whole droves of cattle of the same color, and take great pride in their oxen in proportion to the size of their horns. The Namaquas have a perfect mania for a uniform team, and almost all the people of southern Africa value their cattle next to their women, and take great pride in possessing animals that look high-bred." Darwin, from whose "Animals and Plants under Domestication" we take this quotation, adds in his own words: "As numerous breeds are generally found only in long-civilized countries, it may be well to show that in some countries inhabited by barbarous races, who are frequently at war with each other, and therefore have little free communication, several distinct breeds of cattle now exist, or formerly existed, at the Cape of Good Hope. Lignat observed, in 1720, three kinds; at the present day (1868) various travelers have noticed the difference of the breeds in southern Africa. Sir Andrew Smith several years ago remarked to me that the cattle possessed by the different tribes of Kaffirs, though living near

each other under the same latitude and in the same kind of country, yet differed, and he expressed much surprise at the fact." \*

These facts relating to the cattle-breeding propensities of the negroes account for the statements of Daniell, that "phthisis is widely prevalent and very malignant among the negroes of the west coast of Africa." In the interior plateaus of southern Africa phthisis, however, hardly ever occurs. This immunity can be accounted for by the presence of the tsetse fly. This fly inhabits well-defined regions in central Africa, and where it exists cattle, horses and dogs cannot live. †

Let us now take the civilized inhabitants of a colder clime, and we find that in Denmark, one of the noted dairy countries, there are 1,470,078 cows to 2,033,959 inhabitants, or one cow to 1.5-14 inhabitant. The mortality from phthisis in that country ranges from three in a thousand to 2.1 in a thousand. Now Iceland, an island belonging to the King of Denmark, where the climatic conditions are nearly the same, has 20,000 cows to 80,000 inhabitants. There are no definite statistics about this, but taking the most trustworthy accounts of the island as a guide, this is about the condition of affairs. The people of Denmark are well-to-do, and can use for themselves more of their dairy productions, while the poor Icelander pays his rent with his dairy product. With the exception of milk, the Icelander uses very little from his herd for food. In several accounts of travelers in that country, giving a description of the entertainment extended to them, I never find beef in a single instance, while in the winter nearly all the milk used is obtained from the sheep. Owing to the short hay crops, the cows are fed in winter on dried fish, and consequently the cattle will not give milk on the same low diet as the sheep do. With all these modifying influences, and only

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\* Guiol says that consumption is not uncommon among the colored race, particularly the Kaffirs. Guiol, "Archives Gen. de Medecine," November, 1882, p. 329.

† Wallace, "The Geographical Distribution of Animals," 1876. Vol. i, p. 945.

one cow to four individuals, the rarity of phthisis in the island can be accounted for, if my theory is correct. That the disease is rare we know from the writings of Schleisner, who says: "According to the unanimous testimony of practitioners on the island, consumption does indeed occur there, although remarkably seldom. In my own practice I have most carefully examined every patient who complained of even the slightest trouble in the chest, and out of three hundred and twenty-seven persons suffering from chronic diseases of the organs of respiration, I found only three with phthisis."

Evans says that "this statement is borne out by the more recent writings on the state of health in Iceland by Leared, Hjaltlin, and Finsen. It would appear that it is not with any national peculiarity that we have here to do, from the fact that Icelanders who migrate to Denmark fall into consumption not infrequently'." \*

Now let us look into the affairs of a little island in the Atlantic Ocean as they existed sixty-eight years ago. It will be remembered that in my former paper on this subject I made the statement that asses and goats were not tuberculous animals. The following is quoted from "A Description of the Island of Saint Michael," by John W. Webster, M.D., 1821: "Every family in Saint Michael has one or more asses, which are the principal beasts of burden in common use, subsisting on the coarsest kind of food; the females afford considerable milk, which is sold to sick persons. Although the island is so well stocked with black cattle, sheep and goats as to allow considerable exportation, few of these belong to the peasantry. Cows are mostly attached to the estates, and the peasant who hires a farm, in addition to a certain quantity of work to be performed for his landlord, is required to take charge of these, and convey the milk, butter and cheese to town, where they are sold for the benefit of the *morgado*, and the poor peasant receives no other recompense for his trouble than some slight abatement in his rent. The

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\* Hirsch, "Handbook of Geographical and Historical Pathology," 1886, Vol. iii., p. 177.

milk is carried to town in skins, on the backs of asses, but, from the agitation it undergoes, on its arrival most of the families in the city prefer using the milk of the goats, herds of which are kept in the vicinity, and daily driven into town and milked at the door of the customers." Dr. Webster adds: "Although the climate of St. Michael cannot be safely recommended to a consumptive patient, it is, nevertheless, rare to see the disease in a native."

Dr. Webster would not have been astonished at this condition of affairs had he realized the truth that phthisis is a disease acquired from the bovine race, for it is a fact that the only people on the face of the globe who enjoy an absolute immunity from phthisis are those who are not in possession of the domestic cow. Take, for instance, the Kirghiz on the steppes of Russia; these people consume large quantities of mare's milk and eat the flesh of horses and sheep, but they have no cows. According to Dr. Neftel and other authority, a case of phthisis among these people was never known. \*

Likewise, the Esquimaux also enjoy immunity, because they have domesticated the reindeer, not the cow.

But this allusion to the Esquimaux does not apply to those who inhabit Greenland and that part of the Danish dominions in the Arctic region. There are Esquimaux that know not the cow, and there are Esquimaux who have domesticated the cow. So there are authorities that state that the Esquimaux are exempt from phthisis, and other authorities equally as positively state that "consumption is common" † among them. Thus, in the Government list of mortality for the Province of Julianshaab, "forty-six persons died (out of a population of 4,115 Esquimaux and mixed breeds) of diseases of the chest, which include phthisis, pneumonia, bronchitis, pleuritis, etc." ‡

This prevalence of tuberculosis is perfectly explained by the facts given in Dr. Hayes' book, "The Land of Desolation." § He writes in his visit to Julianshaab: "Around the

\* Maydell, quoted by Williams.

† Williams, "Influence of Climate in Pulmonary Consumption," p. 17.

‡ *Ibid.*, p. 16.

§ Dr. Hayes, "Land of Desolation," p. 36.

lake were extensive pasture grounds, upon which were browsing a herd of cows. . . . At this I was not a little surprised, for although I knew that in former times cattle had been reared here in great numbers, I had received the impression that at the present time they would not thrive. Mr. Arthur informed me there was no difficulty in raising them, except the very important one of forage for the winter, for at Julianshaab the grass never grows high enough for hay; further up the fjord, however, it is abundant. But since the hay must all be brought in boats, it was both a tedious and expensive operation to gather it. Yet he managed to keep three cows, the Governor had an equal number, the doctor had two, others had each one; and, indeed, all the well-to-do people in the village—Danes, half-breeds and the better class of Greenlanders—had a daily supply of milk the year round." Therefore, according to this testimony, the average of dairy cattle in this community is higher than in many better known localities, and the prevalence of phthisis is not at all surprising.

Now let us look at a locality which once enjoyed immunity but is now notoriously a place of consumption. Wallace in his work on "The Geographical Distribution of Animals," tells us that Australia was the poorest zoological region on the globe. A story is told by Simmonds as follows, which illustrates the scarcity of animals in this region: "Mr. Oldfield, who has seen so much of the aborigines of Australia, informs me that they are all very glad to get a dog, and several instances have been known of the father killing his own infant in order that the mother might suckle the much-prized puppy." The only animals that existed in this island before its invasion by Europeans were, according to Wallace, a few marsupials. Previous to 1788 no ruminants existed in Australia. In that year 1,030 convicts and sailors landed; they had with them as public stock one bull, four cows, one calf, one stallion, three mares, and three colts. In 1790 provisions gave out, and they were obliged to kill all the live stock they possessed. In 1796 two bulls and three calves of the Cape of Good Hope breed were introduced, but they escaped and fled into the interior, where they were lost for

several years. During this year several attempts were made to introduce European cattle, but they all died on the passage. In 1807 the Government had a herd of cattle in the colony, and cows were worth \$400 apiece. In 1821 the Government becoming convinced of the great advantages of Australia as a grazing country, emigrants were allowed a grant of from five hundred to two thousand acres of grazing land, and rations from the king's stores were also allowed to each settler; a certain number of convict servants were likewise apportioned to them. They were also allowed a certain number of cattle from the Government herd, and a loan of money to be repaid in seven years. This was the beginning of the cattle raising in Australia. It proved so successful that in 1826 the Australian Agricultural Company commenced its operations, which was the origin of the "*sheep and cattle mania*," and, as the historian puts it, "the priest forsook his altar and became a herdsman of cattle." A drouth, beginning in 1827 and lasting for three years, cured the mania. But within a year after the drouth, cattle became so plentiful that the meat of the best quality was sold at a cent and a half a pound. In 1833 good cattle could be bought for \$4 or \$5 a head. At the present time, or according to the last consular reports, there are three million inhabitants and eight million cattle—nearly three animals to each individual. This great increase will be seen by the foregoing to have taken place within sixty years. Australia enjoyed a reputation for immunity from consumption and the favorable influence of its climate on the course of the malady, but, as Hirsch says, "this has of late been shown to be a mistake. In Victoria," he continues, "where the disease, it is true, has been a good deal more common *only in recent years*, the mortality from phthisis in 1866 was 6 per cent. of the mortality from all causes, while in Melbourne itself the death rate rose between 1865 and 1869 from 2.22 to 2.52 to a thousand of the population. In New Zealand phthisis has made frightful ravages among the Maoris, and has been one of the chief causes of the gradual extinction of that race." In my opinion, the death-rate from phthisis will keep on increasing in that locality if the breeding of cattle is not properly regulated by



law. We know from other historical facts that cattle can be raised without this great danger, because Hirsch and others tell us that in the Hebrides,\* the Highlands of Scotland, and North Wales consumption is remarkably rare. The rarity of the disease in these localities is accounted for by Darwin's observations while he was studying the conditions of cattle under domestication. He says: "so with the mountain cattle of North Wales and the Hebrides it has been found that they could not withstand being crossed with the larger and more delicate lowland breeds. Our *improved* heavy breeds of cattle could not have been formed on mountainous pastures." Now, any one who has paid much attention to the history of cattle breeding knows that the improved races, as we understand them, are the result of the closest inbreeding. The rarity of the disease in mountainous countries also explains the following quotation from Hirsch: "Few countries of Europe enjoy, on the whole, so favorable conditions as Switzerland in respect to the infrequency of consumption, the figures for the entire country, according to Muller, being 1.86 in a thousand. In studying, however, the statistics of the different cantons, we find the mortality ranging from 3.57 to only 0.81. We know that there are localities in this mountainous country where Darwin's observations respecting mountain breeds would explain this condition of facts. The number of cattle in Switzerland is 1,210,849, and the population 2,906,750, or one animal to  $2\frac{4}{9}$  inhabitants. Of course, too, there are regions of Switzerland where only the goat can range. We find from the official returns† of 1866 that there were 375,482 of these animals in that country, and we know, from the reports of travelers,‡ that the milk from the goat is used exclusively in some localities.

Having considered the conditions of some barbarous and some civilized communities, let us look at the semi-civilized tribes of Madagascar. Both Hirsch and Evans,§ quoting

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\* MacCormac, "Brit. Med. Jour.," 1868, ii, p. 571.

† Simmonds, "Animal Products," p. 56.

‡ Prime, "Letters from Switzerland," p. 44.

§ Hirsch, *op. cit.*, vol. iii. p. 186.

Grenet, say that in this island consumption is as common as it is in any part of Europe, and rapidly fatal. We have no statistics of the numbers of the population or of the cattle, but all the writers who have visited the country speak of the enormous herds of cattle, and say that the principal diet of the natives is meat, milk, and rice. The principal occupation of the Malagasy is the raising of cattle, thousands of which are shipped to the other islands in the Indian Ocean. In fact, the Island of Mauritius, with its mixed inhabitants, depend entirely on Madagascar for its meat supply. The Rev. William Ellis, describing his trip from Tamatave on the coast to the capital, a distance of about three hundred miles, tells us of the natives presenting him, at the end of every few miles' journey, with a bullock, while the Queen herself, as a token of friendship, presented him with eleven. He also adds that the natives never skin their animals, but cut them up and eat the hide as well as the meat.

*(To be continued).*

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## REPORTS OF CASES.

*"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."*—VET-  
ERINARY RECORD.

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### EMBOLISM.

BY C. H. PEABODY, D.V.S., Providence, R. I.

As we see so few cases of embolism reported and so little written about it, I report a case which has come within my practice, thinking it might be of some interest to your readers.

The subject was a sorrel mare, about fifteen hands high, twelve years old, had been used for track purposes and was quite a roader, having been driven hard and for long distances.

This is her history as I have it from the owner: The mare began to lag in her driving three years ago and over, and trip in her nigh hind leg; he did not pay much attention to it, although she always became lame on long drives. He was

advised to blister her, which he did on her nocks, and then he bred her and let her run till the colt was five months old.

He then took her home in August, '89, and she drove all right until he gave her a hard drive, which brought back her lameness. She got her leg through a hole in the stall about two years ago. This is the history as the owner gave it to me last August.

On August 5th, 1890, I was called to go and see this mare, as she was having an attack of lung fever, and to come as soon as I could, as the mare was in a dying condition. After such a message I drove four miles in haste and found the mare standing in a box stall with a pulse of 60, and full, temperature  $102^{\circ}$ , respiration 16. I could not find any lung trouble, still the visible mucus membranes were injected and I put her as I may say under expectant treatment, *i. e.* either to die or get better by the next day.

On August 6th her temperature was  $99\frac{1}{2}^{\circ}$ , pulse 48, full, respiration 12. On the 7th the owner was anxious for me to see her again; the symptoms were the same, and it was on this visit I got the history of the case. I also had the mare trotted by the halter and she showed no signs of lameness. I noticed an atrophy of the muscles both sides of the croup and thigh, and asked how long they had been so; the owner said they had been growing small for some time, but on close inquiry he said it had been so for over a year.

The next account I had of the animal was in September. The owner drove her about twenty miles and before he got her home she became lame and had an attack of colic; when she got to the stable she had another attack of colic, and I was sent for. On my arrival I found the mare standing up and in no pain, but she would lift her hind legs, first one and then the other, and put them down again without a stamp or striking at the belly or looking around, but just lift them with a little shake and put them down. There was only a boy at the stable when I went there, so I didn't get the full history till afterwards. At the time of my arrival the temperature was  $101^{\circ}$ , pulse 60 and full, respiration 16. The animal was eating hay and was dried off; it was about forty-five minutes

after she got back to the stable before I saw her, and I noticed in feeling of her hind legs that they were cold, and I told the boy to apply bandages. By this time the owner had arrived and I told him that I thought the horse had arterial trouble, that I would come some day when he wished and would see her driven. On Oct. 29th I was again called to see the mare; she was in the stable and had not been driven for two days; pulse 48, temperature 99, respiration 10. The mare was harnessed and the owner and myself rode. She was not lame on starting, but after we had gone an eighth of a mile she became lame. We drove about two miles and I thought she would fall before we could get her back to the stable. When we did get back her nostrils were distended. From her head to about midway of the lumbar region she was covered with perspiration, so much so that it ran off her and made puddles on the floor. From about the middle of the lumbar region to her croup and hind legs, and between her thighs, and under the flanks, it was perfectly dry and she would lift as before, first one hind leg and then the other. When the harness was removed I took her temperature; it was 103°, pulse 90, full and hard, respiration 60, visible mucus membrane highly congested, eyes straining, hind extremities cold.

I made a rectal examination and detected a clot about 2½ inches anterior to the bifurcation of the illiacs; on pressure she evinced pain; the pulsation felt as though you were trying to force a large volume of water through a small hose; every pulsation seemed to go, Zip! Zip!! I followed the course of the illiacs and found the same thing. After the animal had been standing an hour, the temperature was 101°, pulse 58, respiration 16. I diagnosed embolism and advised the destruction of the animal, which the owner consented to, and she was sent to my place to be destroyed, Oct. 29th, and an autopsy to be made. The owner, however, changed his mind. The next day took her back and subsequently wrote me two letters, giving me to understand that my diagnosis might be erroneous, saying that she was under treatment, that she had a large abscess on the loins, that she was improving, etc. etc. and brief. On Nov. 19th I was again called to see the mare,

and found her clipped from about half way over her lumbar region to her hocks, and she was one complete scab from a blister that had been applied. She had been rowled and setoned and I judged from her appearance that the abscess had been brought to several heads. She had lost flesh to a great extent. The owner, by my advice, again sent her to my place for destruction. When she got about three miles from his stable she fell down in the street, and was then loaded into a low-gear and in that way I received her.

She was then placed in a loose box stall for the night and the next morning was trotted by the halter; after going half a block she could hardly move, and on Sunday, the 23rd, she was destroyed.

The post-mortem showed her lungs to be somewhat emphysematous, the heart enlarged, weighing  $11\frac{3}{4}$  pounds, intestines healthy and no plugging of the mesenteric or renal arteries. About two inches and a half anterior to the bifurcation of posterior aorta at the illiacs, the clot commenced and I followed it on both sides to below the hocks, in both internal and external illiacs.

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#### ECCENTRIC HYPERTROPHY.

BY CHARLES B. AINSWORTH, D.V.S., Greensburg, Ind.

The patient was a brown mare about fifteen and one-half hands high, four years old, belonging to a farmer who used her for driving to a light buggy, usually on good roads.

The history of the case was that for about six weeks previous to our seeing the patient her appetite was gradually failing and on hitching and driving the animal she would soon become fatigued and would perspire quite freely

She was admitted to the hospital for our examination on July 30th. On making an examination found her temperature to be  $103^{\circ}\text{F}$ . Pulse forty-eight to fifty and very irregular, sometimes beating from two to five regular pulsations and then again missing from two to three; the heart having a tumultuous action and the arterial wave being feeble and irresponsive.

Nothing abnormal was detected on percussion over the cardiac area and nothing on auscultation except the tumultuous action of the heart, which seemed to hang when delivering the impulse.

Jugular venous regurgitation was plainly visible when standing several feet away.

The respirations were slightly accelerated and visible mucus membranes of a pale livid hue, the patient standing with the fore feet slightly extended, the head and ears drooping, the eye-lids half closed and assuming quite a drowsy appearance. She would seldom lay down.

A diagnosis of heart trouble was made, but as to the exact trouble we would not say, but told the owner that recovery was very doubtful and would be slow if she recovered at all. But thinking there might be a possible chance of recovery, the owner wanted to leave her at the hospital for a few days at least; so administered tr. digitalis ʒii every six hours with nitrate of potash in the drinking water and gave her what she would eat of light, easily digestible food. But at the end of four days, seeing not the slightest relief except temporarily from quietude and seeing no possible chance of recovery, we notified the owner that he might just as well take the mare home, as we could do nothing for her, and telling him when she died to let us know and we would hold post-mortem, thinking we would get to do so in four or five days or a week at the longest. But to our surprise she lived till six P.M. Dec. 17th, and on holding post-mortem the following day at ten A.M. found the pericardium uniformly thickened and of a light gray color. The pericardial sac contained a pint and a half of a light straw-colored serous fluid; the cavities of the heart also contained almost a pint of a light yellow looking mass and when squeezing it in the hands it almost disappeared in the form of a serous fluid. The hypertrophy of the ventricles exceeded that of the auricles in proportion to their size. No other lesions were found. On weighing the heart it was found to weigh the enormous weight of twelve and one-half pounds, which is the largest I ever saw during my limited experience in veterinary practice,

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## EXPERIMENTAL PATHOLOGY.

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### TUBERCULOSIS—A MODE OF TREATMENT AND OF INOCULATION.

By MESSRS. J. GRANOHER and H. MARTIN.

A sealed envelope, laid before the Academy of Medicine of Paris by the authors on the 10th of November, 1889, conveyed a statement of the discovery and test of a mode of treatment which had proved successful in arresting for a long time the development of experimental tuberculosis in rabbits.

The publicity given to the treatment discovered by Dr. R. Koch, by which a similar result had been obtained in guinea pigs, has made it necessary for the French investigators to make their researches public sooner than they had anticipated or intended.

The rabbit was selected for their experiments, and the intra-venous injection as the method of inoculation, as being the surest mode of obtaining with certainty a tuberculosis which produces death within a short and comparatively uniform period, with constant characteristic lesions in the liver, spleen and lungs, and which is refractory to any local treatment. Tuberculosis, when thus developed, proving uniformly fatal, a solid basis was thus secured for an accurate determination of the results, whether positive or negative, of the treatment which might be adopted for the purpose of producing a refractory condition in the patient, or of effecting a cure after the administration of the infection.

#### *1st.—Treatment of experimental tuberculosis after infection :*

All the experiments were conducted upon an invariable and uniform plan, the rabbits treated, or witnesses, being inoculated together in the vein of the ear, with the same quantity of a virulent culture, diluted in a little sterilized water. The weight of the animal was taken every day, and served as a guide in the application of the treatment. During the last two years 42 rabbits were experimented upon, 27 treated and 15 as witnesses, in various series. The results obtained, gen-

erally considered, were similar to those of the following series, in which the treatment proved efficacious in all the rabbits treated.

December 31, 1889, seven rabbits were inoculated in the vein of the ear with the same quantity of a very virulent culture. The witness rabbit died 23 days after the inoculation, 5 of the treated rabbits lived 126, 176, 176, 184 and 189 days respectively, and the sixth rabbit was living 229 days after the inoculation. The result of the post-mortem of the dead was almost negative. The spleen was small, and the liver seemed healthy and without bacillus. But the portal perilobular spaces contained some embryonic cells, marks of a tuberculous process in the way of recovery.

*2d.—Inoculation against experimental tuberculosis.*

Viruses were prepared, graded to such a degree that even the point of loss of virulency could no longer be detected. This scale, however, has nothing in it of a mathematical character, although it is as capable of being utilized as are those of the dried spinal cords in the Pasteur treatment of rabies.

Virus No. 1, which is the strongest of the series, is fatal when administered to the rabbit by intra-venous injection, in from fifteen days to a month. Numbers 2, 3, 4, 5, 6, 7, 8, 9 and 10 are successively weaker. Cultures from viruses 10 to 7 inclusive do not increase in strength, and produce no effects on rabbits. Viruses Nos. 2 and 3 are fatal, but take effect at various periods of time, according to the resistance of the animal. The effect is, of course, similar with viruses 4, 5 and 6. One of the first experiments dates back to August 27th, 1887, on which day five rabbits received, in the vein of the ear, half of a Pravoz syringe each of No. 6, a very weak culture. September 3d the same rabbits received virus No. 3, and on the 12th of the same month a second dose of the same virus; September 26th virus No. 2, and on October 15, virus No. 1; three other rabbits being on the last date inoculated as witnesses, and dying respectively on the 28th of October and the 2d and 5th of November, with all the characteristic and authentic lesions of experimental tuberculosis,



to wit, enormous spleen, colored liver and lungs filled with tuberculous granulations. Three others of those inoculated also died with similar lesions. The other two resisted, one until December 17th, the other until January 7th, 1890. Both of these had very slight tuberculous lesions. Some little benefit being thus realized by these first experiments, notwithstanding the insufficiency of the inoculation, which consisted only of the weakened cultures of viruses 6, 3, 3 and 2 before the very virulent inoculation, a new series was made with an increase in the number of inoculation cultures, stopping with virus No. 2. Good results were thus obtained, especially in a series of nine inoculated and two witness rabbits; five of those inoculated on the 25th of January with a culture of virus No. 2, being still alive seven months later.

But when stopping with virus No. 2, the witnesses did not all die at the same time, and the immunity secured seemed less obvious. In a last series then, 11 rabbits received from January 30th to March 25th, cultures of viruses Nos. 6, 5, 4, 3 and 2, and on the 10th of April these 11 rabbits were inoculated with virus No. 1, two witnesses also receiving the same. These two died on the 3d and 10th of May, or 23 and 30 days after the injection. The 11 inoculated resisted longer; two died on the 16th and 26th of June; two on the 7th and 29th of July; four on the 4th, 7th and 9th of August, and three were still living four months after receiving the most virulent inoculation.

*Conclusion.*—The result established, *first*, a prolonged resistance in rabbits to the most rapid and most certain experimental tuberculosis; and again, *second*, an immunity in respect to the same disease, the duration of which yet remains to be determined.

The results obtained by Dr. R. Koch on guinea pigs were probably obtained by different methods and processes, at least so far as the inoculation is concerned, and so long as no allusion is made to it in his published announcement, we are justified in hoping that there will some day be a diversity of methods known for the treatment of tuberculous bacillus,—  
*Académie des Sciences,*

## EXTRACTS FROM FOREIGN JOURNALS.

## VAGINAL HYSTEROTOMY.

BY MR. REPIQUET.

A pregnant cow, fifteen days late in her delivery, was taken very sick. She was lying down and had become very weak from the efforts she had been making. Upon vaginal exploration, a crepitation indicative of a non-united fracture was revealed and the os uteri was discovered to be hard and tightly closed, admitting the introduction of one finger into the cavity only with great difficulty. The obstacle to the dilatation consisted in the presence of a series of fibrous rings of the mucous membrane which remained inextensible. Three incisions were made with a guarded bistoury, upon the vaginal portion of the neck, dividing only the thickness of the mucous membrane, and carefully avoiding injury to the muscular coat. This division was repeated three times and at each time the stricture of the neck yielded to pressure to such an extent that towards the end both fists were introduced into the womb. The calf was removed alive. But little blood was lost during the operation, and the cow recovered in a few days.

*Conclusion.*—This operation is certainly indicated in many cases of stricture of the os and is not attended with the degree of danger sometimes apprehended.—*Progres Veterinaire.*

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## UTERO-VAGINAL CYST IN A COW.

BY MR. J. PRISSOT.

As a cow was about to be milked a large tumor was observed to be protruding through the vulva, which obliged her to carry her tail sidewise. When called to see her the author found himself called upon to determine whether he had to deal with a prolapsus of the bladder, or with a soft liquid tumor or cyst. Notwithstanding the violent resistance of the animal, and the difficulty of exploration, the course of the urethra was easily traced, and it was found to occupy its nor-

mal position. The diagnosis was therefore evidently that of a cystic tumor. A free incision emptied the whole sac and its mass was secured at its base with an elastic ligature, the amputation of the rest of the envelopes completing the operation. The stump of the tumor sloughed away in time, though slowly, and after three weeks the animal was in proper health.—*Ibid.*

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#### INTESTINAL WORMS IN YOUNG CALVES.

BY MR. GUITTARD.

The following is the treatment recommended by the author. He says: "In the evening, a few hours after a meal, I give to the calf from eight to twelve grammes (two to three drachms) of empyreumatic oil, mixed with a mucilaginous emulsion, and ten hours after, or the next morning, a purgative of sulphate of soda. Large masses of ascarides are then passed during the day."—*Ibid.*

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#### VOMITING IN THE HORSE.

BY MR. C. CARETTE.

Notwithstanding the generally known fact that the act of vomiting in the horse is usually an indication of fatal termination, there are cases on record of the recovery of solipeds after this disturbance, and this case of Mr. Carette is now to be added to the list. The patient was found one day covered with perspiration, the face contracted, the eye fixed and hollow, the physiognomy anxious, the pulse 58 to the minute, and evidently suffering from violent colics. The neck was suddenly and violently extended, and the animal vomited, returning through the nose and mouth the mush which he had taken a couple of hours before. This continued for some fifteen minutes, and the rejected matters had their typical odor. A drench of ether, with assafætida, peppermint and bromide potassium was administered; friction was applied over the body, and half an hour after the animal was quiet and looking for food. The next day the same phenomenon occurred again, and the patient was relieved by the same treatment. Five

days later another attack occurred, which lasted but a few minutes and low diet was prescribed. Two weeks later, the horse having resumed his work, another slight attack of nausea occurred, and fifteen days after a repetition of the same symptom but no more vomiting, and he has since then enjoyed perfect health. The author queries as to the cause of the trouble. Was it a distention of the cardia, or was it due to a special nervous irritation.—*Annal de Belgiq.*

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#### NUMEROUS ŒSOPHAGEAL POLYPI IN A COW.

BY MR. MAUR.

According to Zundel, this is a rare affection among our domestic animals, and Johne mentions only one case occurring in the horse, with a few rare instances in ruminants, and even in these the neoplasts were few in number and quite small in size. Mr. Maur has met with a case full of interest, in a cow seven years old, which had been for six months suffering with a cough, but slight at first, but at length becoming quite troublesome. It was at first thought to be a symptom of slight bronchitis, but later an irregular swelling, visible only after eating, was observed in the left jugular groove. By degrees the tumor became more defined, the passage of the food through the œsophagus became more difficult, and violent efforts became necessary to accomplish the act of deglutition. A more or less tympanic condition followed each meal, but this usually subsided after half an hour with frequent and noisy eructations. Regurgitation was quite easy, but rumination, irregular at first, soon ceased completely. With the exception of the cough, the respiratory function was about normal. After an interval the tumor became more prominent, increasing during meals, but subsequently diminishing. It was soft, depressible, without heat and but little painful under pressure, but it was immovable and irreducible. An œsophageal jabot was suspected and as after some time the cow began to lose flesh, she was destroyed. At the post-mortem, the œsophagus was found to be the seat of numerous growths which, according to Professor Gratia, who examined them, proved to be of a papillomatous nature.—*Ibid.*

## OINTMENT OF BI-IODINE OF MERCURY IN INJECTIONS.

BY MR. G. JOLY.

The author has for several years used this remedy in fistulous wounds, those of the withers and in arthritis, with marked success. He considers that though generally used as a vesicant, this preparation is one of the best antiseptic ointments made. One part of the mercurial salt, with eight of vaseline, with the addition of a sufficient quantity of oil to make the mixture of a syrupy consistency, makes a preparation which prevents the formation of pus upon solutions of continuity of all kinds, and materially assists in their cicatization. His last case, the fiftieth in his experiments, was that of a mare which had broken her knees and had a large tumefaction of the joints, with an abundant escape of purulent synovia. The fistulous tract was cleaned three times a day with an injection of clear and fresh water, followed by one of a solution of bichlorure of mercury, 1-1000, and the dressing was completed by one of the ointment, using careful precautions to prevent it from coming in contact with the skin below the injury. The tract was healed and the mare on the road to recovery in ten days.—*Presse Veterinaire*.

## SULPHATE OF ESERINE IN DOSIMETRIC DOSES.

The third number of the *Revue of Veterinary Dosimetric Medicine* records a number of cases of intestinal disturbance, due to various causes, which were treated principally by the administration of eserine in dosimetric doses, that is in granules of milligramme weight. In these cases the eserine was associated with granules of chlorhydrate of morphine, or those of sulphate or arseniate of strychnine. Among the cases referred to there is one of intestinal malaise, one of stomacal indigestion, one of intestinal indigestion, one of slight enteritis and one of intestinal indigestion; one of slight enteritis and one of intestinal indigestion with tympanitis and stercoral masses. The administration of the granules was varied according to the case, being from one to three of eserine with generally two of the other drugs, repeated every half hour, every quarter of an hour, or even every five minutes, according to the severity of the colic.—*Revue Med. Dos. Veter.*

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**BIBLIOGRAPHY AND NOTICES.**

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NOUVEAU DICTIONNAIRE PRATIQUE DE MEDECINE, DE CHIRURGIE ET D'HYGIENE VETERINAIRES. (New Practical Dictionary of Veterinary Medicine, Surgery and Hygiene), began by H. Bouley and continued by Professors A. Sanson, L. Trasbot and Director E. Nocard. Vol. XVIII. (Asselin & Houzeau).

This true encyclopedia of veterinary science is by steady degrees approaching completion. The new volume, which we have recently received, though issued some months ago, fills a wide gap, and includes many subjects of interest. Several of the leading French veterinarians have lent their aid to this latest number, which, like its predecessors, forms a volume of nearly 600 pages. It is printed and made up strictly as a practical scientific work, without aspiring to the style and finish of an *edition de luxe*. The articles contained in this Eighteenth Volume comprehend the following subjects: Prostate, Prothesis, Tail, by Professor Cadiot; Purgatives and Purgation, by Professor Kaufmann; Priapism, Prodomes, Prognosis, by Mr. Labat; Rachitism, by Mr. Leclainche; Anatomy and Physiology of the Lungs, by Professor Moussu; Pyohemia, by Director Nocard; Prophylaxis, Quarantine and Rabies, by Professor Peuch; Protozoa, Fleas and Bugs, by Professor Railliet; Precocity, Proportions, Thoroughbred, Breeds and Diet, by Professor Sanson, and though last, not least, Pathology of the Lungs, by Professor Trasbot.

SPECIAL PATHOLOGY AND THERAPEUTICS OF DOMESTIC ANIMALS, by Drs. Frieberger and Fröhner. Translated from the German by Professor Cadiot and Mr. Ries.—(Asselin & Houzeau).

This is the first part of the most recent standard German work, written by the learned professors of the Munich and the Berlin Veterinary Schools. It treats of the diseases of the digestive apparatus. The entire work is to be issued in four parts, and when completed will form two large octavo volumes. The second part will cover the diseases of the urinary, genital and tegumentary apparatuses, as well as those

of the circulation. Diseases of the locomotory apparatus, of the nervous system, of the functions of respiration and of constitutional chronic diseases will be treated in the third part, and the work will be completed in the fourth part in treating of infectious disease and of epizootics proper.

BLACK BEAUTY, his grooms and companions, by A. Sewell.

We have received from President G. T. Angell a copy of this little book and thank him for it. It is well adapted for the purpose it has in view, and we think might be read and studied with a chance of impressing the practice of patience and kind treatment towards suffering animals, even by some of our colleagues.

TIERARZTLICHES ARZNEIBUCH FUR STUDIERENDE AND PRAKTISCHE TIERARZTE, by Dr. Carl Arnold of the Hanover School.

A concise little work upon therapeutics and pharmacy, which our German and German-speaking brethren will do well to read and study.

## VETERINARY COLLEGES.

### ONTARIO VETERINARY COLLEGE.

The Christmas examinations of this college were concluded on Friday, Dec. 19th, 1890. The students passed a rigorous examination by the examining board. The following is the result ;

#### THE GRADUATING CLASS.

Arnold, T. F.....	Lewistown, Mo.
Baldock, L. F.....	Mount Charles, Ont.
Cornell, J. H.....	Lambeth, Ont.
Cossitt, Newton.....	Brockville, Ont.
Culliam, D.....	Sheffield, Ont.
Currie, John M.....	Mitchell, Ont.
Faughnan, J. C.....	Bodines, Penn.
Fleming, W. J.....	Millhaven, Ont.
Frank, James R.....	Strathroy, Ont.
Gilmour, R. G.....	Almonte, Ont.
Harrison, James.....	Fergus, Ont.
Hodgins, George M.....	Lucan, Ont.

Holder, S. T.....	Bloomington, Ont.
Kelley, James A.....	Orono, Ont.
Kennedy, Samuel.....	Rupert, Quebec.
Leslie, William.....	Northport, Ont.
Lockwood, Lyman D.....	Penn Yan, N. Y.
McMillan, Adam.....	Carberry, Man.
Mathers, Seth.....	Markdale, Ont.
Miller, W. D.....	Findlay, Ohio.
Milne, John F.....	Clinton, Ont.
Morren, A.....	Minesing, Ont.
Nelson, R. J.....	Paisely, Ont.
Patterson, L. N.....	Oakville, Ont.
Peck, C. L.....	Beamsville, Ohio.
Pink, Charles.....	Ottawa, Ont.
Simon, W. H.....	St. John, N. B.
Steiner, J.....	Bergen, N. Y.
Taylor, A. E.....	Brampton, Ont.
Teller, John H.....	Simcoe, Ont.
Thomson, N.....	Toronto, Ont.
Wilkins, George N. N.....	Baysville, Muskoka, Ont.

## PRIMARY EXAMINATIONS.

Barnes, Frank, materia medica; Lewis, D., materia medica; Sowers, John B., materia medica.

## ALUMNI ASSOCIATION OF THE AMERICAN VETERINARY COLLEGE.

CAMDEN, January 5th, 1891.

*Editor American Veterinary Review:*

DEAR SIR:—Dr. Hoskins, President of the Alumni Association of the American Veterinary College, has made the following appointments, which please publish in the REVIEW.

## EXECUTIVE COMMITTEE.

Drs. Bridges (Chairman), W. B. E. Miller, Engeman, Ogle, Labaw, Lowe and M. W. Drake.

## RESIDENT STATE SECRETARIES.

California.....	W. B. Rowland, D.V.S.
Colorado.....	A. F. Martin, D.V.S.
Connecticut.....	A. A. Tuttle, D.V.S.
Dakota.....	G. S. Agersborg, D.V.S.
Delaware.....	H. B. McDowell, D.V.S.
District of Columbia.....	Alex. McKenzie, D.V.S.
Florida.....	E. A. Child, D.V.S.
Illinois.....	J. W. Harwood, D.V.S.
Indiana.....	J. J. Shoemaker, D.V.S.



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Kansas.....	D. C. Ayer, D.V.S.
Kentucky.....	J. C. Kidd, D.V.S.
Maine.....	G. H. Bailey, D.V.S.
Maryland.....	Wm. Dougherty, D.V.S.
Massachusetts.....	J. J. Winchester, D.V.S.
Michigan.....	W. J. Menbennitt, D.V.S.
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Vermont.....	S. C. Wakefield, D.V.S.
Virginia.....	Jno. A. Myers, D.V.S.
West Virginia.....	F. B. Ford, D.V.S.
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Wyoming.....	A. A. Holcombe, D.V.S.

## FOREIGN CORRESPONDING SECRETARIES.

Cuba.....	H. F. Laine, D.V.S.
West Indies.....	F. W. Peniston, D.V.S.
Japan.....	Hara Taka Yokura, D.V.S.

Very respectfully yours,

A. T. SELLER, D.V.S., *Secretary.*

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## SOCIETY MEETINGS.

## MARYLAND STATE VETERINARY MEDICAL SOCIETY.

The regular monthly meeting of the Maryland State Veterinary Medical Society was held at the corner of Madison Avenue and Orchard Street, Baltimore, December 17th, with the President, Dr. W. H. Martenet, in the chair.

The following members responded to the roll call: Drs. Martenet, Hoffman, Dougherty, Barron and Meisner, after which the minutes of the previous meeting were read and approved.

After the usual routine of business, there being no paper presented, the evening was very pleasantly spent in the discussion of interesting cases, etc.

Dr. A. W. Clement was appointed the essayist for the January meeting, after which the meeting adjourned.

H. A. MEISNER, V.M.D., *Secretary.*

## LONG ISLAND VETERINARY SOCIETY.

A regular meeting of the Long Island Veterinary Society was held on Jan. 21st, 1891, at No. 74 Adams Street, Brooklyn, the President, Dr. Roscoe R. Bell, in the chair.

The following members were present: Drs. Geo. H. Berns, Roscoe R. Bell, Geo. F. Bowers, H. Housman, Samuel Atchison, D. S. Breslin, Philip Newman and Wm. H. Pendry.

The minutes of the previous meeting were read and approved.

The Board of Censors made no report.

The next order of business being reading of papers, the Secretary read a communication from the essayist, Dr. Geo. G. Vanderveer, stating his inability to attend the meeting, but forwarding his paper.

It was moved and seconded that the communication be received and the Secretary read the paper. Carried.

The paper, entitled "Leukalmia" was then read.\*

After the reading of the paper it was moved and seconded that the discussion of the paper be postponed until the next meeting. Carried.

The meeting then adjourned.

D. S. BRESLIN, D.V.S., *Secretary.*

## CORRESPONDENCE.

## OSTEO POROSIS.

*Editor Review*; I observe a very worthy article in the REVIEW on the above disease which reflects credit upon the author; Dr. Berns, as an original thinker. That article alone is worth a year's subscription, although it explodes one of my theories of thirty years standing. But as I have never had the advantage of a veterinary education, but have been obliged to pick up here and there along the journey of life through practical experience, and to glean from authors of recognized standing, information in things pertaining to my occupation, doing the best I could and meeting with many reverses, using such remedial measures as I found to yield the best results; I could not of course expect to compete with the men who have had such advantages, and who consequently can locate and name every bone, nerve, blood-vessel and tissue of the whole body, and detect disease in its incipiency, the time when

\*To be published in the next issue.

it can best be treated. Of course death could claim but few victims out of the clutches of men thus amply equipped.

To an uneducated man like me, the wide divergence of standard authors as to the theory and practice in this disease, and the number of fatal cases they record, and their admission of their inability to be of any service, in the light of my own experience, seems wonderful.

At recurring periods the world is startled by the announcement of some great discovery in medicine or bacteriology, by which disease is to be eliminated and death disarmed. In a few months it is denounced as a proven humbug and the novice turns away disheartened, and thinking the hill of science entirely too steep for him to climb.

One theory of big-head was that it was of malarial origin. Another was that it was due to feeding too exclusively with corn and corn fodder, deficient in the phosphates. As it was confined to malarial districts we were left in doubt as to which cause was the original one.

Thirty years ago the disease was so common in Southern Illinois and Indiana that buyers were always on the alert to avoid being taken in, and every horse doctor looked with suspicion on a lame or stiff horse, and their fears were often realized. But, unlike Dr. Berns, we had a palliative treatment, which if not a cure, was regarded with much favor, and we were expected to patch up the unfortunate subject, so that he would be able for years of active service. Of course we could not obliterate the evidence that he had been treated, but aside from the unsightly scars, he was as useful as he had ever been. This may not have been a cure, but it served the purposes of the owners just as well as if it had been; and today, in a week's travel in the same regions, you will not find a horse afflicted with osteoporosis.

The climate and conditions have changed, the proper feeding is understood and corn is no longer the exclusive diet, nor any other one article; farmers having learned that confining an animal to a limited regimen is uniformly productive of disease.

We dissent from the damp stable theory, for when the dis-

ease was most prevalent in this country, very few young horses were ever stabled either in damp or dry stables.

Our treatment consisted in giving large doses of sulphate of iron, black cohosh, sulphur, acetate of potash, internally, and over the enlargement a counter-irritant of bichloride of mercury, turpentine and oil of cedar, heating it with a heated iron. I now think if we had been less severe in heating it in, we would have had less scars to show.

However much the wise men from across the herring-pond may condemn the theory and treatment, they cannot gainsay the results; and though individually burdened with an excess of modesty, I cannot refrain from giving it as my opinion, that wisdom is not confined to the islands of Britain, but that in this wild and wooley West we have men who can give the inhabitants thereof pointers, which if they will take will be of immense advantage to their patients. Of course these importations are useful about election times, but when they come over here as missionaries, it would be well for them to bring their dinners along.

I bid the REVIEW God speed in its educational work, and hope to see the craft more of a unit as to both theories and practice. I have before me a veterinary work printed eighty years ago. I smile as I read of the recommendations there made for treating diseases. Probably in less than eighty years our grandchildren will be laughing at our present authors. Among other things the writer recommends for tetanus, is to place a board between the ears and give a smart blow with a heavy hammer. This, he says, will release the jaws so that the horse can eat. He also recommends the almost indiscriminate use of the hot iron—but here I must go slow lest I tread on the toes of some of our more modern high lights, who hold to it as a sheet anchor.

Are we advancing, or like a blind horse in a mill, traveling in a circle? What I want is more facts, less theory; to profit by mistakes and to have and use all the charity we can command.

V. G. HUNT.

ARCOLA, ILL., Jan. 9th. 1891.

# AMERICAN VETERINARY REVIEW,

MARCH, 1891.

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## EDITORIAL.

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TO OUR READERS.—The present number closes the fourteenth volume of the AMERICAN VETERINARY REVIEW, and we feel that the occasion is a becoming one for the tender to our friends and correspondents of our sincere acknowledgments for the countenance and assistance which we have received at their hands. The kind appreciation of our readers and the valuable support of our subscribers and contributors have not unfrequently caused a recurrence of the thought that the termination of our work is an inadmissible idea, and have likewise brought us to the consideration of the query whether we could not improve upon past performances by rendering to our supporters a better return in the future for the favorable consideration we have hitherto enjoyed. Our correspondents may justly claim a large share in any claim which may exist for the credit of our success, and to those whose articles and reported cases have furnished the pages of the volume now completed, and to the veterinary societies which have so kindly accepted our offer to make the REVIEW their organ of communication with the profession, as well as to the veterinary colleges which by their recognition and acceptance have

proved that they have not looked upon us as the organ of a special school, or any exclusive society or particular *clique*, but as the one impartial representative of veterinary science throughout the country; to all these, we tender our thanks, with our hope that they will continue their assistance and their patronage.

As has been largely the case of late and as it continues to be now, we have been embarrassed by lack of space, and at times papers of special interest as well as other matter of general value have been subjected to postponement at quite inconvenient times; but it gives us pleasure to inform our subscribers that this difficulty will now be remedied, and that with our April issue, which will be the initial number of our fifteenth volume, we shall increase the number of our pages, and otherwise so arrange some of our reading matter, that we shall be able to obviate any further trouble from this limitation of our space, as well as to correct certain other defects which we have recently encountered, as well as to improve some of the aspects present in some of our late issues and especially the present one. We are pleased to be able to state further, that while all our intended changes will necessarily involve an increase of expenses, the rate of subscription will remain the same, and all that we ask from our friends in relation to this point, is that they may avoid the habit of dilatory settlement in remitting their subscriptions, into which some of them have fallen. The neglect of this hint may seriously interfere with the execution of the changes we have in contemplation and—but *verb. sap.*

NOTICE:—Subscribers to the AMERICAN VETERINARY REVIEW are informed that Sabiston & Murray, of 916 6th Avenue, New York, are manufacturing and will have ready immediately a binder to hold the REVIEW for one year. It will consist of a case neatly made of cloth, with the title AMERICAN VETERINARY REVIEW stamped in gold on the back, and the numbers will be kept together by means of twelve cords inside, one for each number of the REVIEW. They will send the binder to any subscriber desiring it, by mail postpaid for sixty cents.

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## ORIGINAL ARTICLES.

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### OPERATION FOR CYSTIC CALCULI.

BY PROF. M. STALKER, V.S., Ames, Iowa.

(A Paper read before the Iowa State Veterinary Medical Association).

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I do not present this paper with the thought of contributing something new to veterinary literature. I do not claim the credit of a discovery in anything I have to say. My work, however, has given me the opportunity for practical experience with a certain class of cases that may not have fallen in the line of experience with all of you. No matter how thoroughly grounded one may be in the theory of any disease or operation, experience will throw some additional light on the subject. The simplest operation performed for the first time has its attending anxiety for the surgeon. If I can say a word that will aid one of you in performing an operation with less risk to the patient and less solicitude on your part, I have accomplished what will satisfy me.

In the discussion of this question we wish first to arrive at some rational method of examination that will insure a correct diagnosis. There is probably no difficulty that is susceptible of clearer proof than the presence of a cystic calculus, and yet I apprehend that a large number of cases go unrecognized. A physical examination is perfectly simple and easy to perform, and its results need leave no doubt in the mind of the intelligent examiner as to the presence of a calculus. The trouble is not in making the examination. The danger is in making one of the "didn't-know-it-was-loaded," mistakes.

Three cases of cystic calculi have come under my observation at the college hospital, two of them within the last twelve months. All these cases had been treated repeatedly for colic. They were all looked upon by their owners as being strongly predisposed to that trouble. The history of all these cases showed that they were subject to these painful attacks under the most varying conditions. No system of

feeding, working or general management afforded any immunity against these troublesome attacks. Such a history, taken with the accompanying symptom of frequent efforts at micturation, but the passage of only a small quantity of urine at any one time, it would seem should have suggested to some one the thought of other trouble than colic in any of its forms. But it is quite as certain that it did not. The first case was an aged gelding that had been raised and worked on a farm about four miles from the college. He had been subject to these attacks for two or three years. He was a strong, good-looking work animal, and apparently suffered no special inconvenience except during the periodic attacks. The history of the case directed my attention to the probability of calculus. Rectal examination revealed a calculus about the size of an ordinary hen's egg. I informed the owner that an operation was the only course that promised any satisfactory results.

After putting the animal in proper condition for the operation, I passed the catheter and secured it in position by passing a strap around the body. The patient was then secured in a narrow operating stall so he could not get down. I then proceeded to operate by making a free incision down upon the catheter, just over, or slightly above the ischial arch. This done the catheter was pushed downward, leaving a free opening into the urethra. By introducing the finger the calculus could be plainly felt, tightly wedged in the neck of the bladder. I had but to seize the stone between the thumb and finger and by making considerable traction I took it away without further trouble. The urine followed through the open wound with great force, going to a distance of ten feet. I was somewhat chagrined at the ease with which the operation was performed. I had a beautiful new lithotrite, with which I was expecting to make a very pleasing impression on the minds of the observers, but there was no occasion whatever for its use. The wound was closed with wire sutures and dressed antiseptically. But very little inflammation followed. The only complication presented was the tendency for the urine to escape through the wound and retard healing. After one or two days I kept the catheter constantly in place,



removing it two or three times each day and returning it after thoroughly cleansing. The wound healed kindly and the animal was discharged from the hospital at the end of two weeks. There were no indications of further trouble so long as I knew the animal, which was for a period of two or three years. In this case no anæsthetic was used.

The second case was a mare of mature age; a fine strong farm animal. She had been subject to colicky pains for more than a year. There was occasional difficulty in passing the urine. At such times the discharge would be slight and attended with pain. The history of the case suggested examination for calculus. Exploration per vaginam revealed the presence of a large calculus, very rough on its exterior and spheroidal in shape. The animal was conditioned by light rations of laxative food for two days previous to the operation. The patient was placed upon the operating table and chloroform administered. So soon as complete anæsthesia had set in a thorough examination was made. The stone proved to be much too large to be extracted through the meatus. All my efforts at breaking down the concretion proved unsuccessful. It was so large that I could not succeed in securing it between the jaws of the lithotrite in such a way as to crush it. I finally determined to enlarge the passage. I carried a probe-pointed bistoury into the vagina with the left hand. With the right I pushed the instrument into the meatus and made a careful cut upward and slightly to one side of the median line. With the muscular fibres thus severed, it was an easy matter to secure such a hold as would enable me to extract the object. The bladder was thoroughly cleansed and washed with antiseptics. Two or three catgut sutures were placed, and the animal removed from the table as soon as consciousness had returned. The patient did excellently well and was sent home in ten days.

The third case was a favorite family mare, twenty-two years old. She had been troubled with periodic attacks of colic-like pains for some years. She was brought to the college hospital a few weeks ago for treatment. After getting the history of the case, I directed one of my students to make

an examination per vaginum. He at once informed me there was a tumor or some other form of abnormal growth. After questioning him as to situation and general characteristics, proceeded to make an examination myself. A very large calculus was present. The method of operating was the same as in the last described case, with the exception of allowing the wound to unite without the aid of sutures. The patient did well and was discharged at the end of fifteen days. The stone removed in this last instance weighed fifteen ounces.

These are the only cases that have come under my observation since I have had charge of the hospital at the veterinary college. Any one of these might have escaped a proper diagnosis if nothing more than casual thought had been given to the case. I cannot urge upon you too strongly the necessity for careful attention in all cases of supposed predisposition to colic of a spasmodic type. Do not depend on the owner giving such a history as might lead you to almost a certain knowledge that some other form of trouble existed. These evidences may have escaped the notice of the owner or attendant, or in any event he may fail to give an account of them in his history of the case. You have a patient before you. It is your duty to determine what he is suffering from. The disease diagnosed, there is but one method of procedure.

#### DISCUSSION.

Dr. Thomas: "We are all surely very much interested in the lucid description given of these operations and will be interested to examine these concretions. I would like to know if it would be advisable to examine and operate on a mare heavy with foal. Would examination or operation not produce abortion?"

Prof. Stalker: "I do not think any harm would come from making a physical examination sufficient to make a diagnosis, but would not advise an operation until after the foal was dropped."

Dr. Morse: "I know a case which aborted from the irritation of a manual examination per vaginum. I would like to know if such results generally follow."

Dr. Stewart: "I do not think such results will often follow if usual care is taken. Would not the presence of a large calculus seriously interfere with the act of parturition?"

Dr. Stalker: "The interference would not be very great, owing to the pendulous condition of the bladder. Abortion would probably result from the removal of the calculus."

Dr. Inger: "I have seen cases of stone in the bladder, which did not show

symptoms of colic; but there was some irritation of the bladder. I removed this calculus (exhibiting a large stone) from a mare in September and she dropped a living foal the next March. The incontinence in this case had subsided at the end of the third week. The operation on the gelding for the removal of this stone was similar to the one described in the paper. I did not suture the external wound, which healed very nicely in a short time. These animals were anæsthetised."

Prof. Stalker: "I would advise the use of anæsthetics in the mare when the stone is large, but think it better to operate on the gelding in the standing position. The operation is not a painful one, at least the horse I operated on did not kick nor make much objection, yet precaution should be taken to make it impossible for the operator to be injured."

Dr. Stewart: "I would like to ask Dr. Ingar to describe his method of operating in the mare."

Dr. Ingar: "I gradually dilated the urethra with my hand, taking thirty or forty minutes to dilate the sphincter sufficiently to allow my hand to pass. The stone was grasped with thumb and fingers and removed with the hand."

Dr. Brown saw a calculus removed from a gelding, in which case the stone was grasped by a pair of human obstetric forceps, and he would suggest their use in a mare.

Dr. Stewart thought the suggestion a good one. The peculiar manner of locking the blades would admit of their easy introduction into the bladder, and the shape of the blades would facilitate dilatation of the vesical sphincter by steady traction, which would be much easier upon the operator and quite safe to the animal; care being taken to select suitably shaped forceps.

Dr. Johnson: "Would not a collodion dressing over the sutured wound in the male secure primary adhesions?"

Prof. Stalker: "The urine will find its way around the catheter into the wound and prevent the union of the parts. The results are very satisfactory without the use of sutures."

## RHEUMATISM.

By E. DIGGS, V.S.

(A Paper read before the Indiana Veterinary Association).

Rheumatism is a subject of great importance, one which will admit of broad discussion, is very common, baffles the wisest of men, and one which should be investigated and re-investigated until, if possible, the causes are better known, and the treatment improved.

Therefore, I bring this paper before you, not for the purpose of telling you all about rheumatism, but to tell you what little I know about it from observation and experience, and what prominent writers say about it, (principally the latter).

I have seen no new works or ideas on the disease, either in books or in our veterinary journals.

Rheumatism is an acute febrile disease, caused by certain obscure climatic and diathetic influences, and characterized by pyrexia, sweats and acute shifting inflammation of the joints and other structures.

Of the predisposing causes of acute rheumatism, the most important is inheritance, which can be traced in 27 per cent. of all cases. Previous attacks increase the liability of a return of the disease, but there is a limit to predisposition from this cause after several recurrences.

Climate seems to be a great factor in the production of rheumatism. It is at present a very common result of catarrhal fever, and also as a complication. One of the most common causes is exposure to cold and wet, or in other words the disease seems to have an immediate etiological relation to weather, season and climate. It may make its appearance after a sprain or injury to a joint.

The post-mortem appearances in acute rheumatism are—on opening an affected joint, we find moderate hyperæmia—with occasional ecchymosis of the synovial membrane and fibrous tissues connected with the articulation, a somewhat opaque, granular, swollen appearance of the synovial surface, and a considerable amount of inflammatory effusion, generally thin, clear, alkaline and albuminous.

The cartilages are sometimes inflamed, the tendons and their sheaths are frequently congested at the seat of the effusion. When death is produced by rheumatism, there must be some complicating intercurrent disease or injury, and in such cases the non-arthritical lesions are necessarily the most important, such as the lungs, pleura, heart, pericardium, etc.

When pyrexia has been great, the solid viscera present a granular degeneration, and are prone to rapid decomposition, and in cases of hyperpyrexia the blood is fluid.

From chemical analysis of the blood, the liquor sanguinis is found to be alkaline; the fibrin has been said to increase in amount about one per cent, the amount of urea is not above normal, and neither uric nor lactic acid, nor any other abnor-

mal principle has been found in the blood during an attack of acute rheumatism.

The pathology of acute rheumatism is still obscure, (of course a germ is an easy answer) and in the present article it will be sufficient to enumerate the principal theories upon the subject.

1.—Prout, Todd and Richardson say : Lactic acid accumulates in the body, and the symptoms are directly referable to the action of this poison upon the system.

2.—Canstall and Seitz say : Chill of the peripheral parts of the body, especially of the skin and joints, causes disturbance of the corresponding parts of the central nervous system, and this gives rise to pain and vaso-motor or trophic changes of the same peripheral parts, and to fever.

3.—Senator says : Chill causes accumulation of lactic acid ; this acts on the central nervous system, and the disordered nervous centers react upon the joints, etc.

4.—Fuller says : Chill disturbs the nervous system ; this disturbs nutrition generally ; lactic or some other acid is retained and acts as a poison.

5.—Hueter says : Chills are attended with the entrance of micrococci into the system and endocarditis is the result ; the joints symptoms are secondary and embolic, as in pyæmic arthritis.

6.—Sailsbury says : The disease is due to the presence in the blood of a vegetable organism of a definite character (*Zymotosis translucens*).

7.—Maclagan says : Rheumatism is due to the presence in the system of a poison which is of the nature of a miasm ; entering from without, this miasm is generically *allied to*, but specifically distinct from the miasm of malarial fever.

Without attempting to criticise all these theories, we may conclude that the true pathology of rheumatism cannot possibly be settled until the essential nature of fever is thoroughly understood, which cannot be until the physiologists explain why the temperature in health remains at a given point.

My opinion is, that an acid of some kind is formed or re-

tained in the system from some cause, and I do not believe this to be a micro-organism. So on account of so much darkness as to the real pathology and origin of this disease, we will have to wait and hope that at some time in the near future, some one will make this grand discovery, which, no doubt, will assist us in its treatment.

Of course, there are various forms and classes of rheumatism which it will be unnecessary to describe in full, therefore I will simply name them, as follows: Acute, sub-acute, chronic, gonorrhoeal muscular, muscular torticollis, pleurodynia, lumbago, cephalodynia, dorsodynia, abdominal, etc.

Some of these forms are uncommon in the horse, or if they occur I am unable to diagnose them. I will next direct your attention to a few of the most important cases I have had to deal with.

1.—A two-year-old colt with muscular rheumatism caused by exposure to cold and wet; found him lying on his side perfectly stiff, muscles rigid, the division of which could be easily seen; pressure to any part of the body caused great pain; pulse quickened; temperature, 103°F.

Gave nitrate of potash three times a day and ordered him turned with care twice a day for two days. I also left valerianate of morphine to be given as necessary, and followed this treatment with salicylate of soda.

On the fourth day he was on his feet and recovered very rapidly.

2.—A colt two weeks old, with articular rheumatism of the near hock joint caused by an umbilical abscess.

The affected articulation was very painful and considerably swollen; the pulse quickened and temperature elevated.

I gave bromide of potash and tr. strophanthus as necessary; anodyne liniment externally, and followed with salicylate of ammonia. The foal recovered in about two weeks.

3.—A horse eight years old, with abdominal rheumatism caused by influenza. There was tucking up of the flanks, cough, tenderness of abdominal muscles; the patient walked with great difficulty, being almost unable to step over anything; pulse quickened, temperature 102 $\frac{3}{8}$ °F.

Gave bromide of potash and syrup of wild cherry, followed by salicylate of soda. Recovery followed in three weeks.

4.—A mare six years old with articular rheumatism of the near knee and hock joints caused by influenza. She walked with great difficulty, joints swollen and very tender; pulse quickened and temperature elevated.

Gave bromide of potash and valerianate of morphine, followed by salicylate of soda, and that by nux vomica combined with hyposulphite of soda, with gentle exercise. She is gradually improving, but not well.

I communicate these cases to you simply to show you my line of treatment for rheumatism, with which I have had most excellent results.

#### DISCUSSION.

Dr. Thompson inquired of essayist how he distinguished between acute rheumatism and osteo porosis? The questioner said he had had many cases where he had found it impossible to distinguish between the two, excepting by examination of the urine. If this was acid it was rheumatism; if alkaline, osteo-porosis.

Dr. Culbert inquired, had the essayist noticed any cracking of the joints? No. Did he not think hot water very beneficial in cases where joint was affected? Yes, and essayist often used in cases of severe pain in a joint, a liniment of aconite, belladonna and camphor with oil.

Dr. Feeling believed in the beneficial effect of hot water, as he could speak from experience, being a martyr to rheumatism.

Dr. Macaulay in his treatment always gave a brisk cathartic and followed up generally with nitrate of potash and salicylate of soda. Had had two cases of osteo-porosis during the year, but had no difficulty in diagnosing; believed that in rheumatic cases the pain and lameness came on suddenly, while in osteo-porosis the lameness was gradual and constantly increasing and not so inclined to shift.

Dr. Roberts does not believe in large doses of salicylate of soda, but prefers to give half drachm doses often, and in combination gives diuretics and aconite.

Dr. Thompson had never seen a case that occurred where a horse stood on a board floor, and believed the damp earth was frequently the cause of the trouble.

Dr. Rodgers never gave aloes in rheumatism, but preferred sulphate of magnesia, followed by nitrate of potash and colchicum.

Dr. Shaffer believed in good hygienic surroundings while treating.

## COLD APPLICATIONS VERSUS COUNTER-IRRITATION IN PNEUMONIA.

By N. R. MACAULAY, V.S.

(A Paper read before the Indiana Veterinary Association).

I am privileged to present for your consideration and criticism a few remarks on the actions of counter-irritants and cold applications in pneumonia. In bringing this subject before you I feel that there is no apology needed on my part, as the disease is one with which we are all familiar, being met with in practice as frequently, perhaps, as any, and the application also of counter-irritants in this trouble is one to which I think none of us are strangers, while with cold applications we are not so familiar, very few of us probably knowing much about them, practically, in pneumonia. I have never used them myself, but my attention has, in numerous instances, been drawn to the effects of counter-irritation in cases of pneumonia, that were very far from being beneficial, and it was these observations that led me to study more closely the disease and remedy, and that really led to the writing of this paper.

To compare satisfactorily the effects of these two agents, so entirely opposite in their actions on pneumonia, let us forget, if we can, that we have ever seen a case where the counter-irritant has been applied and, if possible, for the time, let us drown any prejudice we may have formed in our minds against the use of cold applications, and try and settle by reasoning which should be the proper mode of treatment. To do this, and be sure we are correct in our conclusions, it is first necessary that we thoroughly understand the pathology of the trouble we are dealing with, and secondly, the physiological action of the remedies we apply.

Pneumonia or lung fever, as it is very commonly termed, is generally ushered in with a "chill," or "chills." In almost all, or I might say in all of our cases of pneumonia we can find some direct cause for this "chilling." The horse may have been out in some cold rain; or—as is frequently the case



—has been carefully blanketed when in the stable, and his overcoat, as it may be termed, is removed when he is taken out in the colder air ; or the patient may have been in some draught, etc. The causes are numerous, each case having its own special ætiology, and it matters not what this may be so the “chill” occurs.

The question now arises : What is the nature of the “chilling” ? It is of nervous origin, and this brings us down to the starting-point of the disease. This “chill” has been defined as a “prolonged depression of nerve force without the reaction which should occur immediately after the collapse.”

In the case where the “chill” occurs in the horse, the action of the cold air on the cutaneous nerves and nerve endings has been severe, so severe that for a time the nerve centres are paralyzed, as it were, from the number of afferent impulses received, and have lost control over the vaso-motor center, so that we find the caliber of the vessels over which these minute nerves possess an inhibitory power, constricted and carrying less blood than formerly. This condition of affairs is followed in a short time by what is termed the “reaction,” when the nerve centers, recovering from the shock, begin to reassert command over the vaso-constrictor centre, and the blood flows again freely through the minute capillaries ; and it is just at this point where the crisis occurs. If the action of the cold has not been too depressing in its effect, the minute nerves once more take command of the capillaries and vessels nearest them, and all goes on well. If, on the other hand, the depressing effects have been too severe, these nerves are not able to reassume their governing power over the walls of the vessels, these consequently lose their tone, so that when the blood is pumped into them they become unduly relaxed and filled, and because of this the blood flows slowly and more slowly until it almost stagnates and we have what is termed congestion.

This is the result of the action of the cold air on the outside skin. Now, as we are dealing more particularly with the lungs, let us not forget that the mucous membrane lining the bronchial tubes and the air cells is continuous with the exter-

nal skin, and in structure much the same, only much more delicate and much more sensitive ; and as the same cold air is breathed into the lungs that causes such an action on the skin, we would expect to find the result of its action here much more serious ; and that is exactly what we do find.

When the lungs become congested, their function is greatly interfered with, and it is about this time that the "chilling" or shivering is noticed. This has been attributed to nature as a last resource, trying mechanically to rouse the nerve centres, and when these have been too greatly strained to respond, the most serious consequences occur and inflammation shortly settles on the congested lung and we have pneumonia. With the occurrence of this congestion and inflammation we notice other changes from the normal condition, notably, increased number of respirations, increased heart beat, rise in temperature, dryness of skin, impaired assimilation, etc.

Why do we find the number of respirations and the number of heart beats increased? It is greatly due to the failure of the vagi to assert their inhibitory power over the lungs and heart, and the quicker heart beat is partially due to lack of resistance of blood pressure, but if we look closely and study what is the result of the increased respiration and pulsation on the system, we will surely see that here again nature, with that inherent power she possesses of rectifying evils that may happen to the system, is trying to remedy the existing condition. In the quickened pulsation of the heart I fancy I see an attempt to drive the blood through the vessels in which it is stagnating, and thus equalize the circulation, and in the increased respiration is it not nature, by the contraction and expansion of the lung, assisting the heart in its action by mechanically forcing the blood along through the congested vessels, as well as at the same time causing the healthy or normal part of the lung to do more oxidation of the blood? It is the *vis medicatrix naturæ* working through the vagi if you will, but if we recognize the beneficial effects of this increased respiration and pulsation, let us be careful that in our treatment we in no wise go counter to nature's dictations.

The increase of temperature that we notice in the patient has been set down to increased metabolism, while other and later writers believe there is a thermic center in the corpus striatum, and that this has been so influenced by adverse surroundings that it has lost its inhibitory power over the system. But whatever may be the correct cause of the rise in temperature, we will pass it by for the present by merely noting that it is there, and is symbolical by its rise or fall of the intensity of the internal trouble.

The dryness of the skin is due to the increase of temperature and the loss of the nerve control over the pseudoriferous glands.

These are some of the most striking changes we notice in pneumonia, with some of the physiological reasons for their existence.

The physical symptoms of pneumonia we are all familiar with; on percussion we have a dullness that invariably affects the lower part of the lung and extends upwards, the distance being only governed by the extent of the disease. Over this dull spot there is also a loss of respiratory murmur. The question may here present itself as to why the lower part of the lung should be the first part affected? The answer is simply the law of gravitation. I mention this here because I think it shows us that some of the laws that affect diseased parts are the same as those which govern the universe, and in our treatment of this disease certain laws, although they may appear to be purely mechanical, exert the same influence on the system as they do in nature and should not be overlooked. Farther on I may have reason to refer to this again.

In following up a case of pneumonia we find that it usually extends over from two to three weeks, and that this period is divided into certain well defined stages. The first or initial stage occurs with the rigors or shiverings. In this stage there is high temperature and considerable congestion of the lungs, which is not pronounced enough, however, to be apparent on percussion. If this shivering has its desired effect of rousing the system, the congestions are dispelled and the trouble is at an end, and it is only when this is not the case

that we have the second stage, appearing about the second or third day. When this stage occurs, percussion and auscultation give definite results, and we are able to say how much of the lung is affected. In this stage the temperature generally ranges from  $103^{\circ}$  to  $106^{\circ}$ , and remains about the same until from the seventh to tenth day when, if the animal is to recover it gradually falls, the appetite improves and congested condition of lung gradually disappears. If the case is to terminate seriously we find no diminution of temperature and an increase in size of part over the lung where there is no resonance or percussion, and this is shortly followed by death.

Remembering the conditions of the lung in pneumonia, with all the incidental changes accompanying the inflammation, let us look upon the action of a smart counter-irritant, say a mustard blister, as that is perhaps most frequently applied, and see in what way it will help toward recovery.

When first a blister is applied to the skin there is a pleasurable sensation of warmth, which is quickly followed by a tingling, burning and then intense pain. We can some of us speak very feelingly on this point, knowing from personal experience how a blister acts.

When a blister is applied to the skin its first action on the nerves causes a momentary constriction of the blood vessels, followed quickly, however, by an enlargement of the vessels by distention of their caliber and a consequent congestion with blood.

Up to this point, in comparing the actions of the blister and the cold on the system, are they not almost identical? The main difference in the results appears to be that one—the cold—has been more general and the other merely local in its effects. The stimulus to the nerves has been as different almost, as it is possible for them to be, but in each case their action on the nervous system must have been alike as far as the vaso-motor centre is concerned, because we find the same chain of phenomena following each of the irritants.

Another point, however, in the action of the blister on the nervous system has yet to be considered, and that is the sensation of pain it causes. What effect has this on the internal

trouble? We know that before this sensation of pain occurs the nerves must have been injured. Certain experiments on animals by Wood and others have proven that injuries to the nervous system cause a rise in temperature, and Dr. White, lecturer at Guy's Hospital, London, in an able paper, has tried to prove that all pyrexias are of a nervous origin, and in following up the history of a case of pneumonia we can thoroughly substantiate that fact. The action of the blister then, because of its irritating effect on the nerves, cannot but increase the temperature and by so doing aggravate the disease.

True, we find the capillaries and veins and, in fact, all the cutaneous circulation around the irritated part in a congested condition, and in this way an external congestion is established and a "reservoir" formed where a large quantity of blood can be stored away, thus drawing a great deal from the internal organs, and by so doing the advocate of counter-irritation reasons we will relieve the congested condition of the vessels in the inflamed lungs; but before jumping at this conclusion, let us look a little further into its action. When the pain due to the blister first commences, it causes great uneasiness of the animal, as is shown by pawing, perspiring and uneasy movements generally, which in a short time gives place to a pain that is more settled, that is, it is not so severe when standing quietly, but that is intense when any movement is made.

The patient if made to move, does so very reluctantly and frequently groans with the pain so caused, and in order to move this blistered area as little as possible, we find the animal stationary, with breathing faster and more shallow, the upper portion of the lung doing the greatest amount of work. At every inspiration there is a stretching of the muscles over which the blister is, and the sufferer finds that by standing quietly, and using these muscles as little as possible, he endures less pain; thus we find the upper portion of the lungs called upon to do more, while the lower, the inflamed portion, and the parts immediately adjacent to the diseased area, do less than formerly, so that the blood stasis is much more

readily effected than when that portion of the lung was doing a little expansion and contraction, for then these very movements helped to force the stagnating blood along. Just here allow me to make a remark about counter-irritants in general. In all cases they enforce rest of the part over which they are applied, and I believe that many a case of sprain or strain has been greatly benefited by this enforced rest the animal has given the limb because of the pain the blister has caused, but while this enforced rest is beneficial in those cases it certainly is detrimental in those where the lungs are involved, for here there are certain functions that must be performed whether the animal is well or ill, sleeping or waking, and anything that tends to stop such function, aims directly at the life of the animal.

Such being some of the chief actions of the blister, wherein does it do anything towards assisting the animal to recovery? True, a great many cases recover that have been severely blistered, but did the blistering effect the cure? I think not. The animal that has recovered was one that had sufficient vitality to fight through the internal or disease "fire" if I may so term it, and the external fire due to the application, and has recovered in spite of the blistering.

Before going farther it might be serviceable to look back on the treatment of pneumonia in years gone by and compare it with the treatment of to-day in the human family, and see if we can deduce any lessons therefrom for ourselves.

A synopsis of former treatment, without going into internal medicaments, as that is apart from my subject, is summed up in a few words. The patient was kept in a close, warm room, was warmly blanketed, often blistered. And why all this heat? From a fear the patient would chill; and in connection with this treatment and in exactly the same line, the sufferer was allowed nothing but warmed drinks, although he might beg and crave and eventually die for the want of cold water.

In the treatment of to-day what changes are noticeable? Excessive blanketing is discarded, and as far as possible the room is kept sweet and pure and of an even temperature, not

too warm, and patient is allowed all the cold water he wishes. In our treatment of horses do we not follow out the same rules as far as possible? Formerly with us the water was warmed slightly before being given, but now it is as cold as the water healthy horses drink. You may ask how did these changes in hygienic surroundings and in the warm and cold water drinks come about? Some clever physician, I wish I knew his name, studying nature's demands in such a case as shown by the patient's desires, decided to follow no longer in the steps of his predecessors, but to do as nature dictated, and a trial of such treatment completely revolutionized former methods. Now in the matter of the drinking of warm or cold water drinks with fevered patients, wherein lies the difference. Why is it that the patient suffering from pyrexia craves cold water and does not care for the heated water? In both cases the elements in the water are much the same, if anything the heated water is the purer, yet the whole system seems by its craving for the cold to say there is too much heat there already, and the cold by counteracting to a certain extent this excessive heat is particularly agreeable to the sufferer and considerable amounts of it are taken with benefit when the warm would be refused.

This action on the temperature being the chief, or I might say the only difference in the action of the cold and heated water, we are driven to the conclusion that it is purely mechanical, reducing the animal heat in pretty much the same manner as a cup of cold water cools a basin of warm into which it has been poured.

The remarks on the action of cold water internally I have intended as introductory or leading up to a few thoughts on the action of cold water externally. When we consider the great benefit derived by pneumonia patients from the action of the cold water internally, and when we also remember that this beneficial action is for the most part mechanical in its drawing of heat from the system, does it not forcibly suggest the use of cold water externally? To my mind it certainly does and especially in those cases where the temperature is, say  $105^{\circ}$  and upwards, for here the danger to the patient is

imminent if it should remain long at that height, but to substantiate this we must prove it to be correct by reasoning. Let us picture before us the horse with pneumonia and a high temperature: on putting our hand to his body we find the surface hot and dry; let a blanket be wrung out of cold water and applied to the body, more particularly I would say over the chest, and over this put a dry blanket. To many this will seem very unorthodox treatment, but let us see what the action of this cold will be. Its first action will be on the terminal nerves, and we know that when the action of cold is not prolonged long enough to do evil it always does good. The nerves are aroused into action as formerly, the first of which is constriction of blood vessels, but when the reaction comes they still have control because the shock has not been too severe and we have them dilated and filled with blood, but not to engorgement. Thus we see that the action of the cold application is two-fold. There is the mechanical action by drawing off the heat from the system to warm the blanket, and as the blanket warms we find the capillaries filling with blood, giving us the great action of the counter-irritant without the intense pain. I do not think there is any possible chance of the cold blanket "chilling" the animal if the wet blanket is properly covered with the dry, because the bulk of the patient's body is too great and the heat given off is too much in comparison with the cold held by the water in the folds of the blanket. As the blanket would heat take it off and apply another as quickly as possible, and we would again have the same changes—the thermometer being the guide which would direct when to stop.

Let us study for a moment and see what must be the action of this drawing of heat from the overheated system. It is bound to lower the temperature. In all inflammation we find certain phenomena existing. Heat, pain, redness and swelling, each of these depends on the others for its own existence, and this being the fact it should be manifestly plain to all of us that if any of these essential qualifications be done away with or reduced, the inflamed state itself must either cease to be or must be greatly modified.



In this paper I do not intend to consider the action of antipyretics internally, such as quinine, antipyrin, antifebrin or salicylate of soda, further than to say that they by lowering the temperature are of the greatest benefit in fevered patients, and I believe would act harmoniously with the external application. In Germany particularly do we now find patients suffering from typhoid fever and pyrexias of all descriptions being treated with the "cold pack," as it is termed, and with manifest success. By actual experiment Dr. Sassatsky of St. Petersburg found cold water treatment far more antipyretic than either quinine or salicylate of soda. They all diminished the elimination of nitrogen by all the excretory channels, but the cold water most of any.

In cases of sunstroke, those of us who have met with such cases know the great benefit derived from cold water. By this means I have reduced the temperature of a horse from  $108\frac{2}{5}^{\circ}$  F. to  $101^{\circ}$  in five hours. True, some one may raise the objection that the causes for rise of temperature in this case are entirely different from what has raised the temperature in pneumonia, but, as before mentioned, the result is the same, and knowing as we do the quickness with which a high fever wears out the animal's system, let us forget the cause and get rid of the existing condition.

In speaking of pneumonia and its causes I have not made mention of the bacilli pneumococci said to be found in lung troubles. My not having mentioned this before is not due to any unbelief of mine of their existence; I certainly think they are to be found in many instances, particularly I would say where the pneumonia is a sequence of some disease, such as influenza. At the present day great investigations are going on concerning the microbic origin of disease, some putting down all diseases as being due to the microbe or germ that has gained admission into the system. I believe this is essentially true of a great many diseases, but I just as sincerely believe there are other diseases, particularly those in which congestions first appear, that owe their existence entirely to a nervous origin, and it is under this head I class the pneumonia heretofore mentioned. It is quite possible that after the con-

gestion has occurred the germ that might be floating in the atmosphere may find a desirable habitat, but the chilling and congestion have been the primary factors of the disease. Claude Bernard by section of the sympathetic nerve of the neck caused congestion of that side of face and head, this congestion being entirely due to the loss of inhibitory power over the vessels and not to any microbe. But let us suppose for the sake of argument that the disease is due to a bacillus pneumococci, what would be the result of the action of cold applications? Here I will again mention that I am not dealing with internal medicaments. The action of the cold would reduce the temperature. In this case you will say we are treating a symptom of the disease, but when we remember that the vitality of the germ is not so great and that it does not reproduce and thrive so readily with a reduced temperature, we surely would be treating scientifically.

The eyes of all medical men, and I might say of all the thinking world, are to-day fixed upon the result of the inoculation of Prof. Koch's lymph in tuberculous patients. Up to date the composition of the lymph is a secret, but from its action it certainly is directly antagonistic to the tubercle bacillus. The injection has even been the means of assisting in a correct diagnosis of doubtful cases. When there is no tubercular trouble there is no reaction, but if there is tuberculosis its action is manifest, thus showing its antagonism to the disease it is intended to cure.

After all, does not this theory of treating diseases with what is antagonistic or opposite in its effects seem most plausible?

When the weather becomes cold we put on more and warmer garments to counteract its effect, and this being so why not reverse the rule and put on cold applications when too hot?

The surroundings frequently are not such as would sanction the application of cold water for fear of drafts, &c, and there is also another great drawback against the use of this treatment, and that is the popular prejudice there is against the use of anything cold in fevers. Years ago this also applied to the

drinking water, but after ocular demonstration of its benefit, that has somewhat died away.

Again, how often is the practitioner influenced by his client's wishes. The owner often suggesting counter-irritation because he has known of a case that recovered after being blistered, and the surgeon consenting merely for the sake of agreeing, really "doctors" the man at the expense of the horse, knowing that if the animal dies with a good smart blister applied to his sides the owner will be satisfied that every attempt has been made to bring about the animal's recovery and no blame for lack of professional skill will rest upon the veterinary attendant.

#### DISCUSSION.

Dr. Thompson thought cold applications contra-indicated, as cold had been the primary cause of the disease. Inquired of essayist if he would take a patient with a temperature of 106° and lead him to the street on a cold day so that he might have beneficial effect of cold wind to lower his temperature. Believe that if a little cold would do good in a fever, considerable cold would do more.

Answer: "The cases are in no way parallel. In the one the application of cold in the form of a wet blanket covered with a dry one, the amount of cold is limited and the bulk of the body in its heated condition will heat the wetted blanket; the shock here cannot be so severe as to cause a chill when the reaction occurs. By using the cold to sides we are merely following out nature's promptings when she causes the patient to crave for the cold water rather than the hot."

Dr. Culbert thinks the cold good, but to facilitate or do away with the changing of blankets entirely, would recommend the use of Dr. Magor's patent water bag.

Dr. Diggs: "Does essayist consider the use of cold applications to be of benefit in the congestive stage? Yes, where temperature is high.

Dr. Roberts does not favor use of blister. It prolongs cases that might be cut short. Considers blisters merely a way to make a larger bill on owner.

Dr. Culbert: "What internal treatment do you recommend?"

Any antipyretic medicine—quinine, acetanilid, salicylate of soda, &c. should work well in conjunction with cold application.

Dr. Shaffer: "I never used any external applications, but believe with Prof. Williams that in stagnating cases blisters by rousing the whole system might be beneficial."

Dr. Thompson believed blister to be of service where pleuro is affected, but not when lung substance itself is involved.

Dr. Culbert: "The only objection to the cold water treatment is that we have not as good surroundings for our patients as medical practitioners. Regarding blistering, does not think he has ever killed any with it but certainly believes he has prolonged cases."

## CASE REPORT—TENOTOMY.

BY C. F. BELL, V.S.

(A Paper read before the Indiana Veterinary Association).

I have several reasons for calling your attention to this particular case. The first one is: I have, from the origin of this Association, noticed a conspicuous absence of reports of cases in practice; the second is: I believe that such reports, whether the results be favorable or not, will assist us more in advancing our practical knowledge, than any other method we can pursue.

Hence I bring before you a case in practice of which I feel (and I think justly) proud. Last August there was brought to my infirmary, a fine blue bull (roadster) colt, four months old, with contracted tendons in all four of its legs: the right front one being the worst.

Excepting the defective legs, the colt was as fine a specimen of physical development as any I ever saw at that age, and being standard bred made it quite valuable in the estimation of its owner, who was very anxious to have it successfully treated.

I took special pains to show him a dissected specimen of front and hind limbs, and explained that I was satisfied that performing tenotomy would be the only thing that would relieve the tendons.

The colt was left in my care with an injunction to not perform tenotomy until further ordered, but to try other means for relaxing the tendons; which I did, without avail, the contraction continuing to grow worse.

After two weeks the owner gave the case entirely into my hands, to do as I saw fit; and I at once performed tenotomy on the right front leg. Having four legs to operate on, I concluded to do as much experimenting on them as possible. I cast the colt, shaved all the hair off from the leg over the part to be operated on; cleaned it well with warm water and sublimated solution, using all antiseptic precautions possible.

I next looped a small rope above the foot and gave it to

an assistant to hold, and keep the leg straight. I then made an incision with a bistoury, half way between the knee and fetlock joints, at the posterior border of the perforans tendon. The incision was just large enough to allow me to insert a probe-pointed bistoury with ease—about one-quarter of an inch in length. I next took a probe and broke down the tissues, passing it in until I could feel it through the skin on the opposite side. I then put in the knife, turning the edge towards the tendon.

The assistant now pulled on the leg, straightening it; which stretched the tendon, making it tense, and easy to cut; which I did, separating the perforans and perforatus, without making the wound in the skin any larger. In this operation there was not to exceed two drops of blood. I then filled the cut in the skin with sulphate of quinia, put on a small pledget of absorbent cotton, and a light bandage.

The wound healed without a particle of suppuration. The only trouble I experienced was, the leg dropped down too much. This gave me some cause for alarm, but I concluded to go on with the three remaining legs, and see what the result would be.

In about four weeks, as near as I can remember, I operated on the left front leg, differing from the first, using no antiseptic precaution, but using a subcutaneous injection of a four per cent. solution of cocaine.

This leg not being so contracted, I concluded that it was not necessary to cut more than one tendon—the perforans, leaving the perforatus uninjured.

I then strained the leg, breaking down the tissues—the ends of the tendon separating about an inch, which could be plainly felt through the skin. I dressed the wound with quinine, placing a pledget of absorbent cotton over the wound, applied a bandage and let the colt up. The foot came to the ground in a natural position.

I was called away for two days, and on my return found the bandage still on and the leg considerably swollen.

I removed the bandage and applied hot fomentations for an hour, after which I dried the parts, and then applied

arnica and witch hazel. In the morning found swelling reduced; and in a short time the wound healed up.

As soon as the left leg was healed properly, I prepared to operate on the hind legs. I dressed the soles, and lowered the heels, as had been done with the fore feet, so the feet would be in a natural position when the tendons were severed. I, however, dressed the heels lower than natural, leaving the toes long, so as to obtain all the leverage possible.

I took no antiseptic precaution, and operated on the outside of one leg, and on the inside of the other, separating only the perforans.

In the leg I operated on from the inside, I had a little hæmorrhage, owing to the severing of a small artery. This one I bandaged; the other one was left without bandage or anything else. I could not notice any difference in their healing; neither of them swelling a particle, or developing any symptoms of suppuration.

The colt to-day is perfectly sound in three legs, standing in a natural position, and growing finely.

The first leg operated on dropped down too low, and in order to rectify this I had applied a shoe with a brace, extending from the toe along the anterior part of the leg to the fetlock joint, which was reinforced by lateral braces, extending from the heels of the shoe forward to the preceding, the leg being then retained in its normal position by means of a bandage passed around the brace and fetlock.

Present appearance indicate that within a few weeks the leg will have regained sufficient strength to permit the removal of the shoe, so that after much labor and care I hope to have a practically sound colt, and a valuable lesson from clinical experience.

#### DISCUSSION.

Dr. Thompson believed the right front leg would have done better if left entirely alone after the operation: he had had such cases and they ultimately came to natural position. Believed it is proper in such cases to raise the heel, rather than to cut it down.

Dr. Knowles.—Believed if right front leg had been left alone, it would have come all right in time.

Dr. Robert.—Had had three cases of cut tendons. One accidentally cut,

died. His second case was in a large draft horse. After operation, a shoe, such as Dr. Bell describes, was applied, and in six weeks horse was at work. In this case no shoe was put on and foot went down, and stayed down.

The essayist mentioned here that the colt had not been born with contracted tendons; for legs were natural and puffy the week before contracting. He also uses quinine in all new cuts; as in cases treated in that way there was not one-tenth the amount of suppuration, and the wounds generally heal by first intention.

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## THE ADMINISTRATION OF MEDICINE.

BY A. J. THOMPSON, V. S.

(A Paper read before the Indiana Veterinary Association).

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One of the chief aims of this paper is at brevity, for, in the language of Sir Robert Southey; "If you would be pudent, be brief; for 'tis with words as with sunbeams, the more they are condensed the deeper they burn." My object is not to tire your patience with an exhaustive discourse on the prevalent theories regarding the administration of medicines, but in a simple way to bring before you for consideration a few simple facts of every day practical experience. I do not even promise to present anything entirely new, but shall be quite satisfied if I succeed in impressing some old truths upon our minds. "Perhaps," says Dr. Johnson, "the excellence of aphorisms consists, not so much in the expression of some rare and abstruse sentiment, as in the comprehension of some obvious and useful truths in a few words. We frequently fall into error and folly, not because the true principles of action are not known, but because for the time being they are not remembered; and he may therefore be justly numbered among the benefactors of mankind who contracts all the great rules of life into short sentences that may be easily impressed on the memory, and taught by frequent recollection to recur habitually to the mind." It is truly said that "'Tis better to know much of few things than to know little of many." A correct knowledge of the action of a few simple remedies and the proper mode of preparing and administering them so as to bring about such action, is of far more practical value than a knowledge of the theoretical action of hundreds of drugs

without knowing how to apply them. Many remedies, as we are all aware, have different actions when applied in different ways. Take for example, the simple drug, potassium nitrate, which has no less than four separate and distinct actions, neither conflicting with the others, and all depending entirely upon the amount given and the mode of administration.

The first thing to be looked at, after having diagnosed our case and decided upon the remedy to be applied for the alleviation of the trouble, is to be sure of the purity of the drug which we prescribe. In this day and age, when there are so many impurities and adulterations in all commodities, and when the adroit head of American genius can so artfully imitate nature in the consistency, flavor or odor of almost any drugs, it certainly is no small part of our duties to be sure that we prescribe only that which we know to be pure and reliable. If we prescribe white arsenic, for example, we have no assurance that our prescription, when filled, will contain the dose we intended. If on the other hand we prescribe arsenious acid manufactured by a reliable firm, we know that we always get the same strength. If we prescribe the tincture of opium we meet the same difficulty; likewise with all tinctures. The strength of tinctures will be found different in every different drug house. Fluid extracts are always of known strength and consequently can always be relied upon. We should therefore use care in prescribing only such preparations as we know to be of standard strength.

Having made sure that our drug is a pure one, our next consideration is how to prepare it for administration, and this is the most important step and perhaps the least thought of by veterinary surgeons, in all our treatment. In our preparation there are two important objects which we must seek to obtain: First: That we may get the full and prompt physiological action, and second, that we may facilitate the administration of the same. Many will prepare almost all bulky drugs in the form of a bolus, which is certainly a very unsatisfactory mode of administration. I have seen practitioners have aloetic balls prepared



for weeks before administration, and then wonder that they do not get prompt action from them when given. Others will give chloral hydrate in gelatine capsules and when they dissolve, if indeed they do dissolve at all, will cause such nausea that, were it possible, the horse would vomit up his very hoofs, figuratively speaking. If anyone believes that this is not injurious to the patient, let him try the experiment of taking into his own stomach ten grains of chloral in capsule and he will be convinced. I have known two instances where a capsule of chloral lodged in the fauces and dissolved there; you can imagine for yourselves the condition of the nasal and buccal mucous membranes twelve hours later. In both cases death resulted. I have in mind another case where an ordinary chloral ball was administered, and half an hour later the horse showed all the symptoms of the severest regurgitation and continued so for hours. The nausea\* was so severe that the horse neither ate nor drank for three days. Sometimes, as before hinted at, the stomach will be in such a condition that a capsule will not even dissolve in it, and they have been known in many instances to be passed just as they entered the stomach.

The best and most satisfactory method of administering medicine too bulky for intravenous or hypodermic injections is in the liquid form. We can generally get the same action from thirty grains of quinine in liquid form that we can from one drachm given in the form of powder. Chloral should never be given in any other form than in solution and then highly diluted†. Physics are best given simple, that is, each by itself; combining two or more, such as aloes and calomel, is positively dangerous. They should, like vermifuges, always be given on an empty stomach. I have frequently seen santonine given in powder with feed or

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\*Was this not œsophagitis and a sensation of choking, rather than nausea?—W. L. W.

†We have found repeatedly that after the administration of one full dose of chloral, especially in solution, the fauces are so anæsthetized or the muscles of deglutition paralyzed, that drenches are afterward *very* perilous, producing serious and even fatal, strangling.—W. L. W.

in an aqueous solution. It consequently had no effect as a vermifuge, as it has been demonstrated beyond a doubt that in order to get that action you must give santonine in a solution of oil. The quantity of medicine administered should always be the minimum dose for the required effect. Nearly all practitioners give from one-third to one-half more medicine than is really necessary. We are told by our professors, and we read in our text books and journals, that the dose of medicines differs in different cases, and they account for it by saying it is due to the individual idiosyncrasies of the animals. But a far more satisfactory and more nearly correct explanation would be, for the majority of cases, that the drug used has not been of good quality ; or it has not been properly prepared for administration ; or it has not been properly administered ; or, owing to an impairment of digestion, it has not been assimilated.

Having prepared our medicine, the next step of importance is to see that it is properly given. Many practitioners leave the prescribed medicament at the stables with the hostlers and solace themselves with the vain hope that their patients are receiving their medicine at regular intervals, as prescribed. Yes, at their next visit they note with satisfaction that about the proper quantity is missing and hardly ever stop to think how much easier it is to consign it to the manure pit than to give it to the horse, and that the chances are about three to one that that is where the largest part of it has gone—perhaps sometimes to the advantage of their patient, especially if its administration requires some little trouble. Now it has been said that there is nothing like knowing how to do a thing, but I say that there is something of far more importance than knowing how, and that is, to do the thing after you know how. A practitioner should ever remember that there is but one person whom he can trust to administer medicine to his patients, and that person is himself. It therefore behooves every practitioner to give all the medicine which he possibly can, himself, and if he must trust the administration to the laity to have it prepared so that it may be given in the simplest and easiest manner.

It is a physiological fact, which is possibly not so widely known as it should be, that when an animal is suffering from acute pain, absorption from the alimentary canal beyond the fauces will take place very sparingly, if at all. When we are called to see a patient suffering from acute indigestion or colic, which has been affected for any length of time, it is consequently almost useless to administer a draught or, much more, a ball. If the case is not too far advanced we may administer a limited quantity of medicine through the medium of the buccal mucous membrane. If too far advanced, however, we will fail to get action from this mode, and must then resort to hypodermic or intravenous injections. The case may be so far advanced, that is, suffering such acute pain for so long a time, that absorption will not take place even by hypodermic, and we must then resort to intravenous medication, from which process, if our drug is pure, we will always get prompt results. It is always the safest and best plan, therefore, in such acute troubles to resort to this mode of administration from the start. All the precaution which is necessary is to prepare a solution, which, if administered hypodermically, will not cause an abscess to form and this solution can safely be administered intravenously by means of a thoroughly clean aseptic needle. Nearly all drugs which are admissible hypodermically, can safely be used for intravenous injections. The best and easiest mode of administration in the ordinary run of cases is to prepare the medicine in a concentrated form, that is, so that the dose shall not exceed from four to eight drachms, and this thrown into the fauces by means of a hard rubber syringe. Precaution is necessary, however, that the medicine is not strong enough to destroy the sensitive mucous membranes with which it comes in contact, or very serious trouble may result. If the dose must be larger, the easiest method of administration is to loop an ordinary strap over the upper incisor teeth and under the lip, pass it through a pulley or over a beam, and one man can easily administer any draught by himself.

Enemas of warm water or soapsuds are very frequently resorted to in many forms of trouble, but most frequently in diges-

tive ailments. Many practitioners place a great deal of confidence in them, but for my part I consider them almost valueless. 'Tis true rectal injections do no harm, and they afford a very good means of entertaining the owner and making him believe you are earning your money, but for actual benefit I have failed to see where it comes in. If the rectum needs evacuating, be assured that nature will assert herself and do the work far more satisfactorily to the patient than the most careful practitioner can. The rectal injection of glycerine to relieve flatulence has been highly recommended by some good authorities. I have not tried it sufficiently to condemn the practice, but have, in the few attempts made, failed to get satisfactory results.

While on the subject of glycerine allow me to offer a suggestion as to a new mode of administration. We no doubt have all been troubled with recurrence of flatulence, in some cases so persistent that we have to puncture many times, and in extreme cases leave our canula inserted for hours at a time, in order to give escape to the rapidly forming gas. I recently experimented on the injection of six or eight ounces of glycerine into the colon through the canula before removal, after puncturing and allowing the gas to escape, with the satisfaction in every case of stopping short the formation of gas. It might be well for all to remember this and try similar experiments, and report the results through some of our journals. The glycerine can easily be injected by means of a hard rubber syringe with a short, strong nozzle, by inserting into the end of the canula. There is but one case, to my knowledge, where the administration of medicine per rectum is better than other modes, and that is in tetanus. By preparing the medicine in the form of small suppositories, and, by means of a pair of long dressing forceps, previously warmed to the temperature of the body, and oiled, slipping one from eight to ten inches into the rectum, if properly done, the patient will be less excited than by any other form of administration in this trouble.

Now a word about the application of heat and moisture. There are cases where dry heat is indicated, and others where

moist heat is better. In case of a sprain in the region of a joint or ligament, or other part where there is a low system of circulation, the application of dry heat will give more satisfactory results, but if we have a bruise or an inflammation due to like cause, and where suppuration is inevitable, then moist heat in the form of warm water is the better form of treatment. If we are in the presence of an inflammation in its first stages, due to some internal cause, and where suppuration is not desired, then cold water, ice bags, etc., are indicated.

#### DISCUSSION.

Dr. Bell does not see how so large a thing as a capsule can pass through the pyloric orifice of stomach unless dissolved or digested. How does essayist give aloes? In solution.

Dr. Macaulay.—In giving medicine two things have to be considered, the man and the patient. Believes the quieter we can give medicine, say to a febrile patient, the more good it will do, it not resisting; for this reason always uses hard rubber syringe, and while patient gets medicine without objecting, the practitioner's clothes are not soiled. Has never found aloes and calomel dangerous.

Dr. Roberts.—Capsules kept a long time become very hard and difficult to dissolve. Is very fond of administering medicine in capsules.

Dr. Thompson would like if some of those present would, when opportunity occurred, try administration of glycerine into intestines per canula, and report success.

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## INDIGESTION IN THE HORSE.

By J. RODGERS, V.S.

(A Paper read before the Indiana Veterinary Association).

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This is a disease found more among heavy breeds of horses, and is divided into chronic, acute, impaction, and engorgement. The three last are similar to each other. You may find indigestion without impaction or engorgement, but either of the two latter will have acute indigestion. They may also be classed as dietetic diseases. We seldom find that they originate from chronic indigestion, but from too much feed. Chronic indigestion is due to a deranged system, caused by feeding inferior food, but can be brought on by dentition, the teeth getting irregular, and especially

in a young animal, where they do not properly shed the temporary molars. This disease may become acute if not carefully and properly attended to. The stomach of the horse is small compared to the size of the animal, and digestion necessarily takes place quickly. I have noticed in making post-mortems that the stomach is not in proportion to the size of the individual. A heavy draught horse's stomach is not as large as in some of the fine breeds, which makes the disease more fatal in the heavier class. Acute indigestion, impaction and engorgement, as I said before, are classed as dietetic diseases. Their symptoms are hard to distinguish separately. Impaction and engorgement generally terminate fatally, as the contents cannot be removed surgically as in the ox. Engorgement is formed in all classes of horses, but more in the heavier breeds, and especially where they are fed cooked food. Acute indigestion is often found in the young animal from allowing the dam to become heated and permitting the colt to suckle, or it may be brought on from allowing the colt to drink cold milk. The symptoms of these diseases are similar. The animal will suffer more or less pain, look around at the sides, paw and strike with the fore feet. One of the most prominent symptoms is eructation of gas. A horse suffering in this way, when lying down will not fall as in colic, but will lie down quietly. I do not find this always the case, for sometimes after flatus has formed in the bowels they will then lie down and roll over. If there is a partition or wall in the stall the animal will frequently get the feet above the level of the body. This is not the rule; I find that an animal generally will lay stretched out. The breathing will be short and quick and the pulse irregular, 60 to 80 per minute. There will be profuse perspiration, in some cases cold, especially in rupture. Upon making enquiry you will find he has had too much food, either intentionally or accidentally, or if in a young animal having suffered from diarrhœa previous to or at the time. The chances are the animal has been suffering from chronic indigestion probably due to dentition. If such is the case and diarrhœa still ensues, gas generally generates quicker than it would had the

animal not suffered from diarrhœa, arising from the fœtid material in the bowels, together with the food in the stomach. If relief is not given at this stage of the disease, with the walls of the stomach paralyzed, there will be rupture of this organ, or diaphragm, or bowels. Impaction of the stomach is generally due to eating dried grasses. One of the most prominent symptoms is eructations of gas, short, labored breathing—in fact a grunt is the way to express it. Engorgement is due to feeding on rich, soft food, such as cooked grains and roots, turnips and potatoes. This disease generally terminates fatally, as rupture of the stomach soon follows and death ensues.

There are a great many different remedies used in treatment. These last two or three years eserine has been used by some with good results, while others have abused it by using for everything and then condemning it. I have used several different remedies. Eserine injected into the trachea in 1 to 2 grain doses acts as a narcotic, depressant and cathartic. I have used as high as three grains and had good results. I find the trocar a very effective instrument in this disease, also ol lini, terebinthæ and aqua ammonia, given in doses to suit the requirement of the animal. I do not believe in the use of much morphine, as it stops the action of the abdominal viscera. Aconite is good in some cases, but only as a febrifuge; given in large doses with eserine you will get a very depressing effect. Always give enemas, as they have a tendency to remove flatus and hasten the action of the bowels. I have used for some time eserine  $1\frac{1}{2}$  grains, atropia 1 grain, injected into the trachea, followed up with morphia, 2 grains, into the vein. With enemas, the trocar when necessary, and warm cloths to the abdomen, I await results.

#### DISCUSSION.

Dr. Shaffer.—Does essayist ever use pilocarpine with eserine? No, because sweats are already profuse enough; combines eserine with atropia.

Dr. Ferling.—Do horses ever vomit and recover? No. Dr. Ferling here related a case where this regurgitation occurred and animal was well and eating hay in half an hour.

Dr. Macaulay.—Very partial to pulverized charcoal and sal soda when

eructations of gas are present. Never had used eserine in indigestion, but in cases when it was used always combined pilocarpine, as it appeared to lessen the severe griping caused by the eserine alone.

Dr. Culbert.—Does essayist give eserine when patient is weak? No, it is too depressing. If there is no response to eserine give oil.

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## LEUKÆMIA.

By Geo. G. VANDERVEER, D.V.S.

(A Paper read before the Long Island Veterinary Society).

In the absence of veterinary literature upon this subject I am indebted to the works of Ziemsen and Pepper for the data necessary for the formation of this paper.

The earliest investigations as to the nature of this disease are those of Bennett and Virchow, which were published in the autumn of 1845. Bennett supposed that the altered condition of the blood was due to the presence of pus, and it was not until six years later, 1851, that he abandoned his theory and gave the name leucocythæmia to the disease.

Virchow's reseaches led him from the first to assign the cause of this white blood to leucocytes. Two years later he published an article in which he considered the conditions under which there might be an increase of the white cells, and their relations to the spleen, and also proposed the name leukæmia.

In 1853 Virchow separated two forms, splenic and lymphatic, and in 1869 Neumann discovered a myelogenous form.

Leukæmia is characterized by a great and persistent increase in the white blood corpuscles, together with a simultaneous decrease in the red cells, but it is unknown whether this relation is due to an arrest of the transformation of white into red cells or to an increased supply of white cells, or whether both of these causes act together.

Little is known as to the causes of the disease, but all the factors which tend to produce primary diseases in the spleen, lymphatic glands and bone marrow should be considered.

As to climate more cases have been reported in temperate regions than in the tropics.



It attacks all ages, but males are more prone to its ravages than females in the proportion of at least 2 to 1.

It is more common among the poorly housed and fed than among those who enjoy better sanitary surroundings.

Previously existing diseases may have an effect in producing the disorder, prominent among which is mentioned malaria, while pre-existing hemorrhages, and injuries from blows and strains are frequent in the histories of cases.

There is extreme wasting, œdema is common, and ascites may often be present. The full amount of blood in the heart and blood vessels, usually in the form of large clots, is a noteworthy feature, and the collections of white cells densely infiltrating these clots, present a pus-like appearance.

In the majority of cases the spleen is hypertrophied, the splenic tumor is always of considerable size, and generally retains its normal form, developing proportionally in all its dimensions. It is usually bluish-red in color, and may be united to the abdominal wall, diaphragm or stomach by strong adhesions. The capsule is thickened and the vessels enlarged. The organ is hard and firm and cuts with resistance, and grayish-white granular tumors may occur either scattered about or arranged in rows throughout its whole extent. In the early stages there is swelling of the pulp and increase in the cell elements without the firmness and hardness of the fully developed leukæmic organ, and at this period rupture may occur.

Uncomplicated cases of the lymphatic form are rare, usually the lymphatics enlarge with the spleen and in the majority of instances the hypertrophy is not extensive. The process seems, just as in the spleen, to begin with a greater flow of blood, and an increased vascularization, under the influence of which the multiplication of glandular elements takes place. The groups of cervical, axillary, mesenteric, and inguinal glands are the most frequently affected; they are moderately soft, movable, and isolated; in chronic cases they may become very indurated.

The bone marrow is usually the seat of important changes, both in the central cavity of the long bones, and in the cancel-

lated structure of the ribs, the sternum, and the vertebræ, the marrow has the same greenish-yellow, purulent color, and the same consistency as mucous pus. Under the microscope it may be seen that cellular elements of the same nature as those occurring in leukæmic blood, form the principal constituents.

The liver is very commonly enlarged, it is pale, smooth, lead and retains its shape. The substance is usually firm, of a grayish-brown color, or may be marbled. Two chief changes have been met with : a diffuse leukæmic infiltration, and numerous small leukæmic tumors.

The kidneys are usually pale, and often enlarged, the capillaries may be distended with leucocytes, and leukæmic tumors may be found, generally in the cortex.

The respiratory system is not often the seat of important lesions. Lymphoid growths have been found in the mucous membrane of the trachea and bronchi, and occasionally in the lungs, where they may closely resemble tubercles, but differ from them in having no tendency to caseate or soften.

In the digestive system the stomach rarely presents any change other than catarrhal; the intestines have in many cases been the seat of tumors which have originated in the solitary and agminated glands. In a few cases the bowel lesions have been so pronounced that the term intestinal leukæmia seemed justifiable.

The changes in the blood are so characteristic that they form the most prominent mark of the disease; the lighter color is more and more marked as the disease progresses; the increase of leucocytes is continued and progressive, leading in its regular progress to the death of the patient. The proportion of colorless corpuscles, finally reached, is very great, as high as 1:3 or 1:2. The number of red corpuscles is not only relatively but absolutely diminished. The specific gravity is lowered; the water and fibrine are increased, and iron considerably diminished.

The most prominent symptoms are weakness, exhaustion, difficulty in breathing, paleness and emaciation, and profuse sweating.

Among the most striking symptoms of splenic leukæmia are to be reckoned hæmorrhages.

The intestinal evacuations are interfered with; at first constipation alternates with diarrhœa, while later the diarrhœa predominates, become copious and frequent, and sometimes bloody.

The urine excretion is in most cases normal in quantity, but towards the end always diminished.

In most cases a considerable disturbance in the temperature is manifested; in the early stages there is only slight variation, but where the disease is well advanced there is always fever of the remittent or of the continuous type.

The appetite, in most cases normal, is rarely diminished, but is sometimes much increased.

The complications may be summed up as serous or sanguineo-serous exudations into the cranial, pleural and abdominal cavities, œdema and congestion of the lungs, pleuritic and peritoneal inflammations and adhesions, and thrombi from the plugging up of the vessels by leucocytes.

The course of the disease is slow and chronic. In exceptional instances, usually in young subjects, it runs a rapid course; but acute leukæmia is rare.

Death takes place usually by asthesia, a gradually progressive weakness, and finally heart failure. Diarrhœa and hæmorrhages hasten the result. Pyæmia and rupture of the spleen are mentioned as causes of death in some cases.

The positive diagnosis depends upon the determination of a great and persistent increase in the white blood corpuscles.

The prognosis is unfavorable in the highest degree. When firmly established, the spleen and glands enlarged, the blood condition marked, and hæmorrhages and dropsies present, death is the only termination to be expected.

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## SOCIETY MEETINGS.

### THE INDIANA ASSOCIATION OF VETERINARY GRADUATES.

The annual meeting of the Indiana Association of Veterinary Graduates was held at the State House, Indianapolis, January 7th and 8th.

On the evening of the 7th, in the absence of the President and Vice-Presidents, the meeting was called to order by the Secretary, Dr. H. Macaulay.

There were present at the opening or during the session, Drs. Knowles, Thompson, Diggs, Macaulay, Roberts, Culbert, Bell, Shaffer, Ferling and Rodgers.

The minutes of the previous meeting were read and approved, and after the transaction of preliminary business the election of officers for the ensuing year took place, resulting as follows: President, Dr. J. Rodgers, of Anderson; First Vice-President, Dr. G. Ferling, of Richmond; Second Vice-President, Dr. J. Culbert, of Portland; Third Vice-President, Dr. G. Buckner, of Rockville; Secretary, Dr. H. Macaulay, of Indianapolis; Treasurer, Dr. E. Diggs, of Winchester.

The newly elected President, Dr. J. Rodgers, now took the chair, and the first paper of the meeting was read by Dr. E. Diggs, on Rheumatism, which was followed by a spirited discussion.\*

The meeting then adjourned until nine o'clock the following morning, when it was called to order, the President, Dr. Rodgers, in the chair.

Dr. Macaulay then read his paper on "Counter-irritation versus Cold Applications in Pneumonia."\*

After a spirited discussion of Dr. Macauley's paper the meeting adjourned for dinner and met at 1:30 P.M.

Dr. Knowles in a short address moved, seconded by Dr. Thompson, that the following resolutions be passed:

*Resolved*, That Dr. F. S. Billings be made an honorary member of this Association.

*Resolved*, That it is the sense of the Indiana Association of Veterinary Graduates that the investigations of Dr. F. S. Billings in contagious and infectious animal diseases have been the only investigations of merit made in these United States. And be it further

*Resolved*, That we feel indebted to Dr. Billings and the State of Nebraska for these investigations. And be it further

*Resolved*, That since the State of Nebraska had Dr. Billings in her employ at the time these investigations were made, and that in our belief Dr. Billings can give the agricultural and scientific world farther enlightenment on infectious and contagious diseases, we therefore request the State of Nebraska to re-employ Dr. Billings for said investigations. And be it further

*Resolved*, That a copy of these resolutions be sent to Dr. Billings and to the State University of Nebraska, and that they be spread on the minute book of this Association.

These resolutions were passed unanimously, and it was just at this moment Dr. Macaulay arrived, and at the request of Dr. Knowles the President read the resolutions over for his benefit.

Dr. Macaulay was sorry he had been detained so as to have been unable to be present when these resolutions had been moved, as he considered it was something with which we, as a society, should have had nothing to do. He understood that Dr. Billings' views on many subjects were at variance with a majority of our leading veterinarians, and by siding with Dr. Billings in this case we were making ourselves antagonistic to them. If any such set of resolutions were to have come before the Association he believed they, the members,

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\*See original articles of this issue.

should have been warned of it in order to satisfy themselves that if they took any steps at all it would be in the right direction. The resolutions were passed and his protest he knew amounted to nothing, but he made it, nevertheless.

Dr. C. F. Bell, of Kokomo, Ind., now favored the Association with a report of an interesting case in which he had performed tenotomy on all four legs of a foal successfully, remedying a serious contraction of the flexor tendons, which was followed by the usual discussion\*.

Dr. A. J. Thompson next read a very able paper on "The Administration of Medicine,"\* which elicited a hearty discussion, in which nearly all members present took part, and this was followed by a paper on "Indigestion," by Dr. J. Rodgers.\*

Moved by Dr. Ferling, seconded by Dr. Diggs, that the next meeting of the Association be held in Richmond in June, the date not yet to be decided on.

The President then named essayists for the next meeting.

The meeting then adjourned.

H. R. MACAULAY, *Secretary.*

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#### NEW YORK STATE VETERINARY MEDICAL SOCIETY.

The first annual meeting of the New York State Veterinary Medical Society was called to order by President Morris, January 16th, at 2 P.M., at Syracuse, N. Y.

The following members responded to the roll-call by the Secretary, Dr. N. P. Hinkley.

Drs. Jno. A. Bell, James Carnrite, A. Drinkwater, W. G. Dodds, O. B. French, Wilson Huff, N. P. Hinkley, J. C. Hill, E. D. Hayden, Pros. James Law, Drs. C. H. Moulter, Claude D. Morris, M. M. Poucher, D. K. Seltzer, Robert Somerville, Harry Sutterby, Frank Sutterby, John Wende.

Letters and telegrams of regret were read from Prof. Liautard, New York; Prof. Smith, Toronto; Dr. A. L. Hunter, Dr. A. N. McQueen, Dr. Charles Cowie, and several others.

President Morris then read his annual address as follows :

One year has elapsed since our Society was organized. Our first annual meeting brings us to the consideration of but one potency. Is it a success, or a failure? The former seems to be the result.

It is most gratifying to watch the progress and deep interest that is being taken, in and out of the Society.

Gentlemen who are members of the profession, but not members of the Society, are keeping close watch as to the probable outcome of the organization, desiring to affiliate themselves with it at no distant day. The regular medical profession is none the less interested, as its members are aware that a centralization of the scientific powers and resources of the veterinary profession would be a potent factor in the development of some of the obscure causes in zymotic diseases. The two professions should go hand in hand, as our aims are one, our interests identical.

While we have not attained all that we thought we were entitled to possess along the line of needed reform, we have, however, taken some advanced and sure steps on this line. We are learning to admire the old adage, that "The top is not reached at a single bound; we must climb the ladder round by round." We have met with reverses and disappointments in legislation, but it would not be legislation worth having unless it did meet with opposition. Hard fought battles make the victory more complete. Reforms of all kinds come slowly; the way must be paved with patience and fortitude. To my mind the horizon never seemed brighter. The medical enactments that were passed during the last session of the Legislature, are a strong lever in our behalf, as our desires are along the same line.

The bond of social union that has been created in the profession, solely through the organization during the short period of but one year, is most praiseworthy indeed. It has brought members of the profession from all quarters of the States, into such genial propinquity with each other that the profit has been far-reaching in its results, not only of a social, but of a professional character. It is the highest ideal of your presiding officer that the 11d section in the by-laws be realized, viz.; The objects of the Society are, to aid in regulating the practice of veterinary medicine and surgery in the State, and to contribute to the diffusion of true science, and particularly to the knowledge of the healing art, and to unite our energies, efforts, and sympathy, for the mutual benefit of all its members. When harmony and union exist in a family, or in an organized society, then there are no obstacles; whatever is wanted can be had; it is only a question of time. All we need is to keep in concord, and we shall have all consistent and needful things.

But we must keep our aims pure and high. Our ideals must reach up into the realms that seem at present almost impossible, and then attain unto the utmost, because no man ever went beyond his ideal, and none of us must ever feel that "now I have reached the climax." There must be a constant improvement in all our professional relations. Let the search and the research in those diseases which seem to be obscure and most difficult, be untiring, and never yield until you have conquered. Be a "crank" on some one thing, and win on that line. Had it not been for "cranks" there never would have been a Jenner, Pasteur, or Koch.

Gentlemen, in the future our profession will have fame; let you and I help to make it such. Our relations in the medical world are important. The position we occupy is one in which we can be of great value to our fellow men. Our energy and skill can determine in a measure the health and longevity of the nation, and as a profession at large it is our imperative duty to search out the evils that we know to exist, and apprise innocent consumers of flesh and milk of the dangers that are daily spread upon their tables. Many diseases of a contagious nature reside in the animal economy, obscure and unnoticed by the casual observer, and not unfrequently by the careful practitioner in its incipient form, and during this period of germinative quiescence there is being developed a living cess-pool of contagion, endangering the health and vigor of the remaining herd and a menace to human life. It is under these conditions that we should awaken to a comprehension of the responsibility resting upon us.

So far as has come under my notice there has only been the usual advance in the progress of the art during the last year. There has been nothing of so signal a character as the introduction into the medical realm of so beneficent a factor for man's good as that brought forward by Prof. Koch in the form of his inoculous lymph, and which is thought to be, and I sincerely hope will prove to be, a specific for tuberculosis in man. Prof. Koch has not only opened an avenue in the medical profession which is of vital importance, but he has opened a broad field to the veterinary profession for development and investigation. If the ravages of this disease can be abated and eventually cured in man, it is only reasonable to suppose that the same results could be obtained in the lower animals. It is a question beyond any doubt that tuberculosis is transmissible not only from one animal to another, but from the lower animals to the human family. And this contagion is carried either in rare cooked meat, in milk or through the air, and any one animal can contribute through all of these channels. It has always seemed to me that to order the destruction of an animal because it is suffering from a contagious disease is an acknowledgment of an imbecile profession and a menace to the function of the art.

It would seem, and I am glad that there is an appearance now presenting itself to the profession, that if so baneful and prevalent a disease as tuberculosis in the lower animals can (in its incipency) be abated, if not cured, and thus render the ox serviceable, not only as a beast of burden, but as a wholesome article of diet. The products of our labor are two-fold; we are not only expected to relieve and palliate the pains and sufferings of the animals, but to restore them to perfect usefulness. And it is only in this last degree that society looks upon our labor as a success. Thus, though the phenomenal advance made by Prof. Koch in his being able to control and seemingly handle at will so noxious a disease as tuberculosis in man, why cannot we, when this inoculous lymph can be procured in sufficient quantities, operate upon the lower animals, because the same degree of merit must exist in the animal economy as in human flesh, so far as its effects is concerned in destroying the bacilli? At least Prof. Koch found the disease easily succumbing while experimenting upon animals. These suggestions may seem to some visionary and unwarrantable, but if I understand the function of our science, it is to cure diseases, and not to destroy the animal because it is suffering with disease. At least to the energetic and inspiring surgeon the field for labor is very broad, especially if we stop to consider the millions of money that is invested in live stock in our State. In 1880 the total number of live stock in our State amounted to 5,806,808, and were divided as follows: horses, 1,000,000; cattle, 2,339,721; sheep, 1,715,180; swine, 751,907; also mules not mentioned in the total, which number 5,000.

At a moderate estimate we had in 1880: \$50,000,000 worth of horses, \$28,079,652 worth of cattle, \$6,003,130 worth of sheep, and \$4,511,442 worth of swine.

It is safe to say that we have in the State \$100,000,000 worth of native-bred stock, to say nothing about the fancy-bred horses and cattle, which number many thousands and are worth many millions of dollars.

It is the enormous wealth in live stock that inspires me to devote my every energy in searching among and finding the hidden facts in the mysteries of our

noble science. And it should be the motive of every gentleman connected with the profession to develop some of the obscure features that are met in ordinary practice and give the result for the enlightenment of the art. Therefore, gentlemen, I would recommend that every member of the Society, especially, devote a small portion of his time to the study, and to the preparation according to the best of his understanding, of a suitable thesis on some one or more subjects that have come under his personal observation and care, by developing the subject through experiments or otherwise, and that the same be published either in a quarterly, semi-annual or annual report of the progress of the art during the year in this State. And in a short time a collection of these papers in book form would become a valuable adjunct to the library of the veterinarian.

There are many questions of vital importance which I could recommend for your consideration, but as we cannot have all at once, we must take the more important ones first, and attain unto the rest as our needs demand.

This question of legislation, which is of great importance to every member, is one we must solve during the present session of the Legislature, and the only way in which it can be solved is by a liberal unanimity and the cemented support of every member of the Society.

Gentlemen, without recommending any further business for your consideration, as a few matters well disposed of are better than many things partially done, I hope that the Society will act harmoniously and liberally, as the only way to move the load is to put your shoulder to the wheel.

The President then asked the Board of Censors to investigate the credential, of applicants for membership. The Chairman of the Board, Dr. N. Sutterby, then reported in favor of the following gentlemen: Dr. Louis Robinson, Buffalo, N. Y.; Dr. Wm. Kirk, Niagara Falls, N. Y.; Dr. J. M. Chase, Poplar Ridge, N. Y.; Dr. P. K. Sidebottom, Rochester, N. Y.; Dr. Geo. Gowland, Auburn, N. Y.; Dr. H. S. Wende, Tonawanda, N. Y.; Dr. E. A. Wieland, Buffalo, N. Y.; Dr. Wm. H. Carpenter, Johnstown, N. Y.

On motion of Dr. H. Sutterby, seconded by Dr. Drinkwater, the above gentlemen were duly declared elected members of the Society. The Secretary then read the minutes of the last meeting, all of which was approved as read.

There being no unfinished business the President called upon the Chairman of the Committee of Arrangements for his report. Dr. Hinckley read the report, which was duly accepted with thanks.

Dr. Sutterby here took occasion to ask the opinion of the members as to having one day's session instead of two, at the regular meetings, giving as a reason that it was taking up too much valuable time. He thought if the members could come to the place of meeting the night before and call the meeting to order early in the morning, that the business might be properly done in one day. Dr. Bell opposed and gave good reasons for having two days' session. Several members entered into a discussion about making the change. It was put to a vote which resulted unanimously in favor of a one days' session and so declared. Then followed the report of the Committee on Publications, which was also accepted.

The report of the Committee on Legislation was then called for. The Chairman, Dr. C. D. Morris, briefly outlined the present so-called law, and also re-



ported why the proposed law was defeated at the last session. He also spoke about the lack of knowledge about the veterinary art of some of the members of the Legislature, also the want of union among the veterinary surgeons. He also read the proposed act for the benefit of new members and to have the opinion of all the members expressed. He strongly urged the necessity of prompt and united action of all qualified men in the State of New York, and suggested a committee be appointed by the Society to go to New York and Brooklyn to personally interview the professional men there, and try and get their hearty co-operation in our course. Also for the same committee to appoint two or three members of the committee to remain at Albany to urge the passage of our new bill. Dr. Carnrite asked the Chairman if the facts of how our milk, meat and dairies were inspected, and the want of veterinary surgeons on all Boards of Health, was properly explained to the members of the Legislature last year. Dr. Morris answered that it had been thoroughly explained to them.

Dr. H. Sutterby asked if it would not be better to ask the co-operation of all local State Societies to use their influence in getting the proposed bill passed.

President Morris said that was his object in getting a committee to go to New York and Brooklyn, to have a personal interview with the professional men and to get their views in this matter.

Dr. Sidebottom asked for the present law of registration, which was read by the Secretary.

Dr. Carnrite asked who was responsible for the present law.

President Morris answered that the present law was framed to put a stop to new *unqualified* practicing, and in time only qualified men would remain. But the quacks had brought influence to bear, and had the act extended from year to year.

Dr. John Wende wanted to know what was to prevent the present law from being extended again.

President Morris said that Governor Hill had said it was the last time he would sign the extension.

Dr. H. Sutterby moved that the proposed act be printed, and a copy placed in the hands of every member of our Society. Also a copy sent to every veterinarian "who was a graduate of a veterinary college or university" in the State of New York. Also to have a fund subscribed by the members of the New York State Veterinary Medical Society to defray the expenses of the committee to go to New York, Brooklyn and Albany, to assist in getting the new proposed act passed. The motion was seconded by Dr. Huff and carried.

Dr. H. Sutterby asked for the reading of certain sections of the bill for the information of some members present who were somewhat in doubt.

Dr. Bell asked how many would be needed to go to Albany and about how much money would be required.

President Morris said one member would be sufficient. Dr. H. Sutterby said send three members. Dr. J. M. Chase said send two members.

Dr. Carnrite thought there would be no objection to this proposed act from the public, but only from unqualified men and their friends.

Dr. Chase said that in his county there were three graduates and forty-two unqualified men.

Dr. Drinkwater said he had talked with a few prominent unqualified men, who said they proposed to ask for a clause in the new bill to graduate the age of men to come before the Board of Examiners, those under the restricted age to be obliged to attend college and graduate before practicing.

Dr. W. G. Dodds fully agreed with Dr. Drinkwater regarding the intentions of unqualified men.

Dr. Sidebottom cited the English law on veterinary practice of qualified men, and registered men having a right to practice as such.

Dr. Wende said that was just the law we have in New York State at present; the trouble was that the time allowed for registration being extended from year to year.

Dr. Hinkley thinks we will have to go slow, and get our laws and wants by degrees and to follow in the footsteps of our brother professional men, the medical doctors, who had been trying a good many years before they had the present law enacted.

Dr. Sutterby wanted individual petitions procured and sent to every member in the State.

Dr. Gowland thought we must be careful and get the proposed act into the hands of our friends only.

Dr. Carnrite asked if Prof. Liautard assisted in framing the proposed law, and if he was in favor of it.

Dr. Morris thought that Prof. Liautard was always willing to aid in the passage of any law or any movement that was made to promote the standing of the qualified veterinarian and the profession at large, and was certain we could depend upon his assistance.

Several members discussed the feeling between the professional men of the Eastern and Western part of the State, and all agreed that we should have "No East, No West," but one good organization, East and West combined, to protect ourselves.

Dr. Carnrite said that even some of the qualified men were acting in company with quackery, putting up proprietary medicines and issuing certificates of practice to young men who pay them for them. He also stated that if the public would only investigate, they would see that the proposed bill was more for the protection of the public than ourselves.

Dr. H. Sutterby's original motion was then put to a vote and carried.

Dr. Bell moved that President Morris and Prof. Law be appointed a committee to attend to the passage of the bill at Albany, and to try and get the assistance of Prof. Liautard and other prominent members of the profession to aid. Motion seconded by Dr. John Wende, and unanimously carried.

A motion was then made and seconded to adjourn until 8 P.M., to allow members to get supper.

#### EVENING SESSION, JANUARY 16TH.

Meeting called to order by President Morris at 8 P.M.

The discussion on legislation was continued.

Dr. Bell made a motion that President Morris be made a committee of one to call on members of the profession in New York and Brooklyn; motion was seconded by Prof. Law and carried by unanimous vote.

President Morris than called for the report of the committee on by-laws.

The report was read by Secretary Hinkley, stating that sections ten and eleven, also Code of Ethics and a list of all members had been added to the By-Laws. These were the only changes or additions made up to date. Report accepted and voted on. Carried unanimously.

Report on constitution was called for, but owing to the absence of the Chairman no report was made.

Dr. H. Sutterby made motion to proceed to elect officers for the ensuing year. Motion seconded by Dr. Drinkwater; voted on and carried.

The election of officers for the ensuing year then took place and resulted as follows: For President, Claude D. Morris, V.S., Bath, N. Y.; Vice-President, A. Drinkwater, V.S., Rochester, N. Y.; Secretary, Nelson P. Hinkley, D.V.S., Buffalo, N. Y.; Treasurer, W. G. Dodds, V.S., Canandaigua, N. Y.; *Board of Censors*, John Wende, V.S., Buffalo, N. Y.; H. Sutterby, V.S., Batavia, N. Y.; John A. Bell, V.S., Watertown, N. Y.; G. H. Summerfeldt, V.S., Gouverneur, N. Y.; A. L. Hunter, V.S., Watkins, N. Y.

Dr. Chase made a motion, seconded by Dr. Huff, that an adjournment be taken until 9 A.M., January 17th. Carried.

#### SESSION OF JANUARY 17TH.

Meeting was called to order at 9 A.M., January 17th, by President Morris, who appointed the following committees to act during the ensuing year:

*Committee on Arrangements.*—W. H. Carpenter, V.S., Johnstown, N. Y.; P. K. Sidebottom, V. S., Rochester, N. Y.; Geo. Gowland, V.S., Auburn, N. Y.

*Committee on Publication.*—L. A. Robinson, V.S., Buffalo, N. Y.; H. S. Wende, V.S., Tonawanda, N. Y.; Wm. Kirk, V.S., Niagara Falls, N. Y.; E. A. Weiland, V.S., Buffalo, N. Y.; N. P. Hinkly, D.V.S., Buffalo, N. Y.

*Committee on Legislation:* Prof. James Law, Ithaca, N. Y.; N. P. Hinkley, D.V.S., Buffalo, N. Y.; C. D. Morris, V.S., Bath, N. Y.

*Committee on By-Laws:* Robt. Somerville, V.S., Buffalo, N. Y.; J. M. Chase, V.S., Poplar Ridge, N. Y.; O. B. French, V.S., Honeoye Falls, N. Y.

*Committee on Constitution:* Frank Sutterby, V.S., Lyons, N. Y.; James Carnrite, V.S., Amsterdam, N. Y.; J. G. Hill, V.S., Sennett, N. Y.; M. M. Poucher, V.S., Oswego, N. Y.; Wilson Huff, V.S., Rome, N. Y.

President Morris then called for the report of the Treasurer, and appointed Drs. Chase and Sidebottom an Auditing Committee.

Report read and accepted by Auditing Committee.

The report of the Secretary was then called for, read and accepted.

A motion was made and seconded that an assessment be made on each member, the amount raised to be used toward paying expenses of legislation. A subscription list was also started and the members present contributed very handsomely, knowing the money raised is to be used for promoting the welfare of the qualified veterinarian and procure laws to protect the public at large.

President Morris then called upon Prof. James Law to read his paper.

A discussion on Prof. Law's paper followed, in which all members took an active part. Prof. Law explained how in making his searches and researches with the action of lymph "as prepared by Prof. Koch" and otherwise, his subjects being the swine and thoroughbred cattle both in England and this country, he had proven that Prof. Koch's experiments were not the first on record.

The President then called on Dr. Drinkwater to read his paper.

A discussion followed in which it was decided by the members present that it was necessary that all qualified practitioners of the State should adopt a form of certificate to be given to the owners of horses examined for soundness.

Motion was made and seconded that an adjournment be taken until 2 P.M. Carried unanimously.

#### AFTERNOON SESSION.

Meeting called to order at 2 P.M.

Dr. Morris then read his paper.

A very lively discussion followed and several expressed their opinion as to the different modes of treatment in diseases of the eyes and the remedies used.

The President then called on Dr. Bell to read his paper.

Dr. Bell's paper was fully discussed by all members present, as was also his mode of treatment in ergot poisoning.

President Morris then called on Dr. Jno. Wende to read his paper.

A discussion was entered into on Dr. Wende's paper by all members present and continued until a late hour.

A motion was made and seconded that we tender a vote of thanks, and compliment the essayists for the interest displayed in reading their papers for the benefit of the members and the able manner in which they had prepared them. Carried unanimously.

A motion was made and seconded to adjourn until the semi-annual meeting to be held in July, 1891, subject to the call of the Secretary. Carried.

And thus closed one of the most interesting and enthusiastic meetings ever held by the New York State Veterinary Medical Society.

#### OHIO STATE VETERINARY MEDICAL ASSOCIATION.

The eighth annual meeting of the Ohio State Veterinary Medical Association was held in Wells Post Hall, Columbus, Ohio, Jan. 14, 1891. The meeting was called to order at 2 P. M., with President Geo. Butler in the chair.

Roll call was answered to by the following: Drs. J. S. Butler, G. W. Butler, E. S. Barnett, T. B. Colton, J. Charlesworth, C. Christman, W. F. Derr, W. C. Fair, J. D. Fair, W. H. Gribble, W. R. Howe, T. B. Hillock, T. Kerr, W. A. Labron, A. H. Logan, J. C. Meyers, Sr., N. C. McLean, J. V. Newton, Walter Shaw, E. H. Shepherd, W. J. Torrance, W. E. Wight, J. M. Waddell. There were also present Prof. Townsend and Drs. Jones, King and Bretz

Minutes of previous meeting read and approved.

The President then rendered his annual address in the following novel manner:

Gentlemen, we extend to you all  
 A Happy New Year's greeting,  
 As we are pleased to see you here  
 At this, our eighth annual meeting;  
 Though many members being absent  
 Causes all of us more regret,  
 Yet our number is sufficient  
 That a pleasant time be spent.

And we trust that in some manner,  
Perhaps by some persuasion,  
Our membership will be induced  
To come, on the next occasion;  
For it surely must be gratifying  
To all assembled here,  
That the science of veterinary medicine,  
Is by no means in the rear.

It is customary for Presidents  
To read a long and fine address,  
But we shall ask of you to-day  
To accept a little less,  
And, with your kind permission,  
A few thoughts here relate  
Before proceeding with the business  
Of the V. S. Association of Ohio State.

Energetic and progressive,  
And talented men of mind  
Are making rapid progress  
In science of every kind,  
And many eminent M. Ds. we know  
Deserve the honor claimed,  
While of honored veterinarians  
Many can be named.

There's a host of ardent workers  
In America and France,  
All eager in the strife to place  
Medicine in advance ;  
And in England, Scotland, Germany,  
And Italy beside,  
Men laboriously are working  
With equal zeal and pride.

Until recent years, contagious diseases,  
Although found far and wide,  
Baffled the most competent  
Their causes to decide ;  
But chemistry and the microscope,  
With human aid combined,  
Have obliterated darkness  
And left ignorance behind.

Cholera, glanders, typhus,  
Yea, a dozen more,  
Have their germs, and do not come by chance  
As thought in days of yore ;

Even osteo sarcoma  
Was for years our diagnosis  
Of that which now we designate  
As actinomykosis.

And just think for a moment,  
What's been done, if you please,  
With rabies, chicken cholera,  
Anthrax and silk worm disease ;  
And the recognition of a bacillus  
Makes sure the diagnosis  
Of that terrible disease  
Known as tuberculosis.

And should Koch's new discovery  
Prove equal to the test,  
Of all the late achievements  
Koch's last will be the best ;  
But if to bovine practice  
He would his skill apply  
We'd sooner ascertain the fact  
If upon his lymph we could rely.

In the study of certain diseases  
Including those of swine  
Our much esteemed Americans  
Are falling into line ;  
And may the ultimate result  
Of this, their grand endeavor,  
Stamp their names, as monuments,  
That will safely stand forever.

And, in this connection,  
Cure, prevention, and relief,  
Pasteur has capped the climax  
And made himself the chief ;  
So thus, on every side we see  
Such rapid progress made,  
And startling developments  
In every new decade.

E'en for the different operations  
That cause our patients pain,  
We should use chloral, ether,  
Chloroform or cocaine,  
For we know, to be successful  
And a sterling reputation gain,  
We must always in our daily life  
Strive to be humane.

A veterinarian's duty  
Is to anæsthetics use,  
And to operate without them  
None can give a good excuse ;  
Simple ovariectomy or castration,  
While the animals yet are conscious,  
You must admit ; to say the least,  
Is cruel and obnoxious.

A great deal has been written,  
And in legal courts been sworn,  
As to whether it was cruel or not  
To amputate the horn ;  
And with veterinarians' testimony  
We have been much impressed,  
That they never mentioned anæsthetics  
When they the court addressed.

Were we the judge in suits at law  
We would every one convict  
Who did the hand of torture,  
And such cruelty inflict  
In performing such an operation,  
So barbarous and pathetic,  
As amputating cattle's horns  
Without an anæsthetic.

And yet we fear, from what we know,  
That many oft forget  
And do things in their practice  
They afterward regret ;  
But as our theme is getting long,  
Just one more thing we'll mention,  
And ask of you a moment more  
To give your kind attention.

If you have not subscribed already,  
You should at once proceed  
To subscribe for veterinary journals  
And their columns carefully read ;  
But which is best for us to take  
We are not here to tell,  
For each one has its purpose,  
And serves that purpose well.

Should we take **THE AMERICAN REVIEW**  
And it thoroughly peruse,  
We'll find its columns always filled  
With important veterinary news ;

While the *Veterinary Archives*  
 Well fulfills its part  
 By publishing comparative news  
 Pertaining to our art.

And should we wish an English work,  
 Fleming's is complete,  
 In furnishing desirable news,  
 It can with others well compete ;  
 While *Pathology and Therapeutics*,  
 That McFadyean does edit,  
 Is certainly scientific  
 And does the author credit.

So in sending our subscriptions  
 We can make no mistake  
 If we make not one omission  
 And do all such journals take ;  
 But our duty does not end there—  
 To read what others edit—  
 Put your shoulder to the wheel,  
 Write yourselves ; and give your cases credit.

In conclusion, fellow members,  
 It is only just and fair  
 To give my thanks for having been  
 Elected to this chair ;  
 And as the time has come again  
 When you make a new selection,  
 Gentlemen ; at once proceed  
 With our annual election.

Nomination and election of officers ensued, which resulted in the following being declared elected, viz : W. R. Howe V.S., Dayton, President ; E. H. Shepherd, V.S., Cleveland, 1st Vice-President ; J. W. Fair, D.V.S., Berlin, 2d Vice-President ; N. C. McLean, V.S., Jeromesville, 3rd Vice-President ; W. H. Gribble, D.V.S., Washington C. H., Secretary ; J. B. Hillock, V.S., Columbus, Treasurer.

The following names were presented for membership, and being vouched for as graduates, were upon ballot all declared elected : Dr. Neil Jones, Chillicothe, (Ontario), vouched for by Drs. Shaw and Butler ; Dr. F. J. King, Zanesville, (Ontario), vouched for by Drs. Butler and Wight ; Dr. S. Bretz, Little Sandusky, (Chicago), vouched for by Drs. Cotton and Hillock.

Each new member in turn was called upon for an address, which was responded to in a few brief remarks.

A letter from Prof. Liautard, was read, expressing his regards for the Ohio Society and offering to print all papers read before the Association and a full report of the meeting.

A vote of thanks were given Dr. Liautard, and the Secretary instructed to obtain the essays and send them for publication.



The Secretary then read a communication from Dr. Kinsman, Secretary of the Board of Live Stock Commissioners, in response to the resolution of censure offered by Dr. Butler and passed at our last semi-annual meeting.

The communication showed that the Live Stock Commission do not or did not have so much authority in contagious diseases as had been presumed, stating that after they quarantine, if the laws are violated, it then becomes the duty of citizens living in the locality to file information with the Prosecuting Attorney and not the duty of the Ohio Live Stock Commission. As to the cases of glanders which the resolution referred to especially called attention to; he states that orders were sent to the Sheriff of the county and if these orders were not obeyed, the information was not in the hands of the Commission (if at all only by hearsay) and those whose well being in person or property was threatened should have entered complaint, and that the law nowhere makes it the duty of the Commission to prosecute those who violate such quarantine laws.

The communication up to this point was well received and many began to think this Association too hasty at our last semi-annual meeting, but the final paragraphs of the letter were a slur upon the ability of Ohio veterinarians, in fact upon veterinarians at large.

For instance he states "The Ohio Live Stock Commission have to say that their experiences with the veterinarians of Ohio have not always been such as to inspire confidence, for until they could find two or more veterinarians to agree touching the diagnosis of glanders they must go slowly. . . for they have not only escaped prosecution themselves, but have protected the veterinarians from this misfortune, and that a veterinarian in the employ of this Commission has been urged that the place is no sinecure and from what we know of the veterinarians' capacity to keep within the bounds of the law, we are free to state that the experiment would be a hazardous one."

A heated discussion followed the reading, in which Drs. Fair, Cotton, Hillock, Gribble and Butler took part.

Dr. Cotton thought the words beneath the dignity of a gentleman, but from his experience with the Commission, we could expect nothing else.

Dr. Gribble said the Commission had been very prompt in aiding him in an outbreak of glanders.

Dr. Hillock thought we were too hasty.

Dr. Fair urged hearty cooperation between the veterinary profession of Ohio and the State Live Stock Commission. Could not say that the Board had treated him with justice, but he desired unity of action.

Dr. Butler described the method of procedure with the Yates horses in Pickaway County.

On the whole it was thought that the remarks referring to disagreement and proficiency of veterinary surgeons was entirely uncalled for and out of place; it was crock calling kettle sooty, for the profession of which Dr. Kinsman is an honored member can certainly not boast of being much better. Especially is this shown in suits at law for malpractice, where one physician sued for damages is convicted on the evidence and expert testimony of several other physicians. Years after, when the subject dies, at post-mortem the convicted physician proves to be the only one who truly diagnosed aright.

The discussion becoming too warm, Dr. Gribble moved and Dr. Wight seconded; That the discussion cease and there be no further discussion unless Dr. Kinsman be present.

Dr. Meyers, Sr., then read a paper on "Tracheotomy and Laryngeal Injections in Affections of the Throat."

He exhibited a tracheotomy tube to be used in cases where it was thought the instrument would be needed but a few days. It is in the form of a trocar and canula with openings at the centre of canula, and to use it, it is passed transversely through the trachea and held in place by set screws.

Dr. Meyers' papers are always full of interest, and this one was no exception to the rule.

Dr. J. S. Butler asked if such injections would be not beneficial in chronic coughs.

Ans. Should judge so, if sufficient quantity of solution be used to well wash mucous membrane.

Dr. Newton described a case of tracheal abscess following the use of a tracheotomy tube: fatal.

Dr. Meyers thought death might have resulted from false membranes, etc., as ulcers were also present. Others thought the case one of irregular strangles.

Dr. Charlesworth reported case where constriction or rather flattening of trachea followed use of tube. Operated twice to relieve and at last was cured by use of a long round silver tube being kept in the trachea until that organ adapted itself to the shape of the tube.

Dr. Butler, who had aided in the case, thought the rings of trachea lacked strength.

Dr. J. D. Fair thought less trouble would result if none of the rings of the trachea were completely cut through, but instead about half of two different rings were removed.

Dr. J. S. Butler read from the London journal a report of a case where the epiglottis become misplaced and held by the velum pendulum palati.

Dr. Shepherd read an essay on the uses of Hyposulphite of Soda, which showed the writer had been quite watchful of its action. It elicited considerable discussion, especially as regarded its use in skin diseases and gastric fermentation.

Dr. Torrence gave his experience in treating skin troubles with chloronaphtholum, claiming it be almost a sure cure, besides being a deodorizer and disinfectant.

The discussion soon ran into the treatment of azoturia, which was generally indulged in and which elicited the fact that this disease was more prevalent and fatal in some localities than in others. Some members expected when the animal was prostrated it was as good as dead, while others paid no particular attention to this fact.

Dr. Derr had a case to which he had called Dr. Wight and others, where paralysis had followed the disease and where the animal was prostrate nine months and then recovered, working to-day all covered with scars from bed sores.

Dr. Gribble had had paralysis follow in several cases, but had never had the luck to find an owner with a nine months patience, for after a few weeks treatment they had invariably killed them.

Moved by Dr. Cotton, seconded by Dr. Newton that we adjourn. Carried.

EVENING SESSION.

Meeting called to order at 7:30 P.M. with Vice-President Shepherd in the chair.

An essay by Dr. Cotton, on "Remedies for Parturient Apoplexy" was read. His pet prescription is the following :

Spts. ammon. aroma., 1 part; spts. aetheris nit., 2 parts. Dose—three ounces every half hour for five hours; then three ounces every hour for five hours.

Also give 24 ounces of magnesia sulph. Large doses of stimulants were in his opinion curative, to be followed with nux vomica if necessary; also rectal injections of hot water.

Drs. Shaw, Butler, Torrence, Derr, Newton and Prof. Townsend lauded olei tigllii even when degulation was paralyzed.

Committee on contagious diseases rendered report.

Dr. J. D. Fair undertook to explain the hair splitting difference between contagious and infections; he differed from Dungleson and Gross.

Dr. Hillock was of opinion that actinomykosis was contagious, citing several reports in proof of same, one being five cases on one farm from trying to cure one.

Drs. Shepherd, Torrence and W. C. Fair reported and gave descriptions of an extensive outbreak of stomatitis in Cleveland.

Dr. J. D. Fair believed in a volatile virus in glanders.

Dr. Gribble could not believe in such a virus; had had some experience with the disease and was well satisfied it resulted from actual inoculation; had never seen a case wherein there was proof of spontaneous origin. If he believed as Dr. Fair, \$4.00 a day when actually in the employ of the great State of Ohio would be no inducement to stand before a case of glanders, for he might be making an examination just at the time this volatile virus was expelled.

Dr. Fair presumed Dr. Gribble would not be a week making the examination.

The theory was not championed by any other member.

Dr. Howe reported several cases of death occurring on one farm that puzzled him. Temperature and pulse were about normal and from examination of these would not think anything wrong, but their facial expression showed otherwise. There was some paralysis and groom stated inability to swallow. Lived but a day or a few hours after being first taken. Youngest seemed to die in shortest time.

Post-mortem (Gross) revealed nothing to satisfy him as to cause of death.

Dr. Hillock suggested diphtheria.

Dr. Fair thought corn stalk disease, as the description tallied with letters received from western farmers.

Dr. Butler thought it not proven that horses have diphtheria.

Dr. Hillock said diphtheria was epidemic among the dogs and cats of Columbus at the present time.

A motion to appoint Committee on Veterinary Legislation brought out so many opinions that it was decided to let the matter alone, as it was useless to waste time in asking help.

Dr. Gribble offered resolution to amend the constitution, that hereafter officers do not take their respective offices until the close of the meeting at which they were elected.

Here Dr. J. S. Butler rose to his feet and in a few most appropriate remarks stated the fact of his having sold his practice, etc., at Piqua on account of his health, and as he was about to locate somewhere in the west, he thought it useless to continue on the membership roll of the Association.

Dr. Newton expressed his sorrow at the loss of Dr. Butler, as he had been associated with the Association ever since it started, in fact had assisted at its birth, and in view of the good which Dr. Butler had been to the Association he moved he be elected an honorary member. This was quickly seconded and carried unanimously.

Dr. Butler thanked the Association and would always try to meet with them wherever possible.

Under discussion for place of next semi-annual meeting it was moved by Dr. Torrence, seconded by Dr. Hillock, that the President, Secretary and Dr. Newton correspond with the officers of the Michigan State Society, and try to agree upon a union meeting at some time and place during the summer Carried.

Bills were presented and allowed.

Treasurer reported about \$300 in hand.

Association adjourned to meet on the order of the President and call of the Secretary, if possible in accordance with above resolution.

W. H. GRIBBLE, D.V.S.,  
*Secretary.*

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## OBITUARY.

### ORMSBY SMEDLEY.

*Whereas,* The Almighty in his divine providence has seen fit to take from our midst our friend and colleague Ormsby Smedley, of Media, Pa., be it

*Resolved,* That by his death, we, the students of the American Veterinary College, deeply feel the loss of him, who had, by his genial and studious disposition, endeared himself to all of us as a friend, class-mate and associate. Also be it

*Resolved,* That we send a copy of these resolutions to the family of the deceased and to the AMERICAN VETERINARY REVIEW for publication.

E. N. STOUT,  
J. E. DELANEY,  
H. D. FENIMORE. } *Committee.*







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