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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Motor Vehicle Accidents--1952

The American public has been appalled by the numbers of casualties incurred by fighting forces in Korea. Congress was bombarded with messages appealing for an end to hostilities and return of loved ones from this "dangerous" operation. Yet, during 1952, almost as many military personnel were killed or maimed in accidents involving motor-driven vehicles as were injured in combat. During 1952 there were 8,486 admissions to the sick list of Navy and Marine Corps personnel due to motor-vehicle accidents. At the same time about 8,700 battle casualties were reported among Navy and Marine Corps personnel--with only 4,750 being serious enough to be taken up on the sick list.

The motor vehicle heads the list as an injury-inducing and death-producing agent in the civil and military forces alike. On an average, during every day of 1952, there were over 22 admissions to the sick list of Navy and Marine Corps personnel due to motor-vehicle-traffic accidents and 1 out of every 12 terminated in death. There were, in addition, an annual total of 253 sick list admissions due to nontraffic accidents involving motor vehicles. The enormity of this problem is shown by the fact that in the naval forces alone about 400,000 sick days were accumulated in medical facilities by Navy and Marine Corps personnel injured in traffic accidents, accounting for 6% of the sick days lost from all causes during the year. Each new admission due to a motor-vehicle accident accounted for an average lost-time of 46 days. These noneffective days in 1952 represent a daily loss of about 1,070 men--enough to fully man several large destroyers or a full combat infantry battalion of Marines.

Most of the traffic accidents (86%) occurred while the individuals were on leave or liberty. On the other hand, for the new cases admitted as the result of nontraffic, motor-vehicle accidents, more than one-half were incurred while on duty status or within the confines of a military compound.

A distribution of the admissions from motor-vehicle accidents during 1952 reveals that almost 4 out of 5 involved passenger automobiles and that in over 85% of these there was a collision with another object. The motorcycle, ranking next as a causative agent, accounted for 12% of the admissions. It was also observed that the motorcycle was responsible for a higher proportion of the motor-vehicle accidents among Navy than Marine Corps personnel.

A higher proportion of Navy personnel were involved in traffic accidents while on leave or liberty than of the Marine Corps, 89% compared to 79%. In addition, for nontraffic accidents, more than one-half of the admissions among Navy personnel in contrast to only one-fourth for Marine Corps personnel occurred while the individual was on a leave or liberty status.

Injuries originating from accidents involving a motor-driven conveyance while on leave or liberty were of a more serious nature than those incurred while on duty or within command. Out of 7,216 new admissions to the sick list as the result of motor-vehicle accidents which occurred when on authorized leave or liberty, 599 died. On the other hand, 1 out of every 15 admissions for motor-vehicle injuries incurred while on duty or on station terminated in death. In addition, patients taken up for treatment through injury in a motor-vehicle accident incurred while in a leave or liberty status averaged 48 sick days per case as compared to 36 sick days for each admitted from an "at work" or "within command" status. The above conditions regarding motor-vehicle accidents are not unexpected because personnel on leave or liberty would generally travel at considerably higher rates of speed and under more trying conditions than when on duty or within a military reservation.

As had been the experience in past seasons for both military and civilian agencies, a high proportion of these traffic accidents occur during weekend and holiday periods. The Saturday through Monday period accounted for over one-half of the traffic-incurred injuries among Navy and Marine Corps personnel during 1952. This 3-day period was also credited with a like proportion of the total motor-vehicle traffic fatalities.

The rate of admission to the sick list for all motor-vehicle injuries incurred by Navy and Marine Corps personnel during 1952 was 806.4 per 100,000 average strength.

During 1952 the death rate from motor-vehicle accidents was 65.1 per 100,000 average strength.

It is of interest that only common upper respiratory infections (including influenza) exceeded motor-vehicle accidents as a cause for noneffectiveness during 1952. The average time lost from these injuries (46 days per case) is more than one-half again as high as the sick days per case from all non-combat injuries (28 days per injury).

Marine Corps personnel had higher admission rates and death rates for motor-vehicle traffic injuries than Navy personnel during 1952. These

rates of admissions and deaths were higher by 50% and by 41% respectively for Marine Corps personnel than Navy.

The rate of admission to the sick list and the death rate for traffic-caused injuries were higher for enlisted than officer personnel.

Most motor-vehicle accidents and resultant deaths occurred on weekends and holiday periods. The summer months, July-September, accounted for a greater proportion of the admissions than any other quarter and the fourth quarter of the year accounted for the most fatalities.

The younger age groups were responsible for most of the injuries as well as deaths from motor-vehicle-traffic accidents. Fully 9 out of 10 of the admissions due to traffic causes were among personnel less than 30 years of age. Also, about the same proportion of traffic deaths involved personnel under 30 years of age. (Medical Statistics Div., BuMed)

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Architectonics of the Heart

The principal function of the heart is a mechanical one and, therefore, to understand heart function one must know its mechanical or three-dimensional architecture. There have been few systematic studies of the structure of the heart from this functional point of view. Conventional technics for the pathologic examination of the heart cannot give this type of information because in them the heart is incised and laid out flat--reducing it to a two dimensional structure--before measurements are made. Such aspects as the directions and sizes of inflow and outflow tracts of the two ventricles, the angles which the tricuspid and mitral valves make with the directions of the inflow tract of the ventricles, and the changes in the direction of the aorta before it emerges from the epicardial fat are important in the function of the heart and often undergo marked and specific alterations with the development of certain heart diseases. These alterations in the functional architecture of the heart sometimes are responsible for certain of the clinical features of heart disease.

The technic for collecting data in this study consisted of recording spatial measurements and angular relationships of the inflow and outflow tracts, the chamber orifices, and the valve components of the two ventricles. Ratios among certain of these data were studied, giving a quantitative and objective framework on which to reconstruct changes which had taken place in the three-dimensional structure of the heart in various forms of heart disease. Although the circumstances of the study did not permit the study of a large enough number of hearts to justify publishing these data in detail, certain types and directions of structural abnormality occurred regularly in specific forms of heart disease, and these observations form the basis for the present report. It is hoped that others will undertake a

more comprehensive and detailed study of these mechanical and spatial characteristics of cardiac pathologic changes.

With the advent of newer diagnostic and therapeutic technics in cardiology it has become more and more important that the clinician understand the functioning or three-dimensional architecture of the heart, and the changes in this architecture which take place with one or another form of heart disease. A method was devised for studying at autopsy the three-dimensional structure of the heart. Approximately 60 selected normal and abnormal hearts were studied by this method.

In the normal heart, the left ventricle has a relatively horizontal position in the body with its mitral and aortic orifices facing the right side of the body. The aorta makes a nearly 90-degree angle with the direction of the outflow tract of the left ventricle before it emerges from the pericardium. The right ventricle lies altogether anteriorly to the left ventricle; and the septum, which is parallel with the frontal plane of the body, is intrinsically a part of the left ventricle rather than an independent muscular partition between the two ventricles.

The sequences of change in the course of development of right ventricular hypertrophy and dilatation are described. An anatomic explanation for the nearly invariable occurrence of right ventricular hypertrophy whenever left ventricular hypertrophy is marked is offered.

An aspect of the pathologic changes of mitral stenosis which has not been widely appreciated is the shortening of the posterior wall of the left ventricle. The implications of this shortening for the development of mitral insufficiency are discussed, and a striking example is presented in detail. The shortening of the posterior wall is believed to represent atrophy of this region of the left ventricle due to the immobilizing effect of the rigid mitral valve elements. It is pointed out that the shortening of the chordae tendinae of mitral stenosis is more apparent than real.

The architectural changes in left ventricular hypertrophy are described. It was found that the hypertrophy tends to be circumferentially symmetric, with the septum participating equally with other regions in the hypertrophy. When the hypertrophy is marked the distal part of the outflow tract of the left ventricle is converted into a narrow conus aorticum, and evidence is offered that occasionally this narrowing may produce turbulence and obstruction to outflow from the left ventricle. The pathologic basis for the Bernheim syndrome is examined, and it is shown that the method of dissection used by Bernheim and his followers was inadequate for demonstrating obstruction of the right ventricular outflow tract. No instance of right ventricular outflow obstruction due to left ventricular hypertrophy was encountered among the hearts examined, and the existence of this syndrome is questioned. The three-dimensional changes which take place with left ventricular dilatation are described, and the role of elongation of the mitral valve elements in left ventricular hypertrophy and in dilatation is discussed. (Am. Heart J., Sept. 1953, R. P. Grant)

Administrative Problems in the Use of Poliomyelitis Immune Globulin

During the present poliomyelitis season about 1 million young persons throughout the nation will receive an injection of immune globulin. If this program is wisely administered, about 500 to 1,000 cases of poliomyelitis may be prevented, but well over 95% of the cases in the nation will remain unchecked. This mass injection procedure will have no influence on the polio epidemic of next year, and may even involve the possibility of depriving several thousand of those persons who receive immune globulin of the benefit of naturally acquired immunity.

This is a health program which is notable for its lack of balance between the public attitude, the available and potential facilities, and the prospect of meeting the total health need. Balance between need, popular attitude, and facilities is characteristic of a sound program; and these three components are worth analyzing in the problem of poliomyelitis.

The health need in communicable disease control involves that component of the natural history of the disease which is accessible to efficient modification through some public health measure. The governing factors of poliomyelitis have been studied more intensively than those of many other diseases. The reservoir and source of infection are known to be human carriers of the specific viruses. The great majority of carriers can only be recognized by elaborate tests which give theoretical information but which cannot be used in the control of a given situation. The transmission is probably inherent in daily human contact and can only be partly modified by general sanitary conduct and avoidance of unusual contacts. While control directed toward reservoirs of infection does not offer promise, much attention is paid to host resistance against poliomyelitis.

The importance of immunity--presence of specific antibodies--as a health need in poliomyelitis has been investigated for over 30 years. The accumulation of knowledge made slow progress as long as monkeys were the only experimental animals. The discovery that mice are susceptible to Type 2 virus was the key to extensive studies in serological epidemiology, of which those of Paul, Hammon, and others are typical. The technic of growing virus in tissue cultures is a recently opened highway to increased information.

Experimentation with human beings was made during the summers of 1951 and 1952, and the dramatic design of the field trials and their results in Utah, Texas, and Iowa are common knowledge and need no repetition. The group of scientists, sponsored by the National Foundation for Infantile Paralysis, used the immune globulin provided by the American National Red Cross and chose a procedure which, in spite of labor and expenditure, would give a significant result in the shortest possible time. It required cooperation of large communities, and a great deal of publicity was involved. With the early publication of the results, it soon became evident that the original pur-

pose of the field experiment was forgotten in the triumph over a "new miracle" preventive which was neither new nor miraculous. In other words, a specific scientific demonstration that antibodies can modify or prevent polio in man was misinterpreted to be a demonstration of a means of controlling poliomyelitis.

The major need in poliomyelitis is, in all probability, the establishment and maintenance of sufficient immunity in the entire population. The only practical means of achieving this end would be active immunization with vaccines which can produce a permanent antibody level. The field trials showed that the necessary level is reasonably low. Such a vaccine is now an experimental fact, but mass production is a problem still unsolved.

Immune globulin can never fulfill the ultimate need because of the short duration of its effect and the limited amount in which it can be produced. However, the public seems so obsessed with the possibilities of gamma globulin that the limited facilities seem only to enhance the demand. It is worth noting that official efforts have all been directed toward improvement of supply facilities, while no assessment of the demand attitude has been made. Generally, it is assumed that people want immune globulin, but only vague ideas exist of what the demand is going to be, and how much an effective campaign could decrease such demand. In this respect, authorities seem not to have made a sufficient effort.

The problem of facilities has enormous implications from an administrative viewpoint. A number of official, professional, and private agencies are involved, partly to secure the product and to manage an equitable distribution and partly to safeguard other health programs which would be jeopardized if all efforts were directed toward procurement of poliomyelitis immune globulin.

The dilemma of the limited supply and the competition for other uses of blood and blood derivatives places the administrative problem of poliomyelitis immune globulin in a unique position in the history of public health and medicine. Other biologics (insulin, pneumococcus serum, penicillin, and the rest of the antibiotics) have had times of scarcity which were overcome by increased production. There were problems of equitable distribution which, however, were less intricate than those affecting gamma globulin because the need was defined by sick persons, not by an uncertain number of persons who might become ill; and in no case was the question of competitive use of the biologic encountered.

Many medical men are not convinced of the utility of using immune globulin as a preventive of poliomyelitis; but, certainly no one can afford a passive attitude and allow free and unlimited use of the product--because of its established usefulness for other purposes.

In summary, the plan for distribution of polio immune globulin in Massachusetts is based on traditional experience of the state's physicians in use of gamma globulin for other diseases. Essentially, it is a program

of preventive medicine centering around the care of the family. Community injection is not advocated, although an extreme situation may occur where the state would apply to the Office of Defense Mobilization for additional immune globulin for this purpose.

With the practicing physicians having the major responsibility for the use of immune globulin, the function of the health department is to arrange a system of distribution through its biologic stations, so that the nearest depot is within reasonable distance of all physicians. A certain control is unavoidable, requiring the physician to report the case of poliomyelitis and the family roster as a receipt for the immune globulin.

Evaluation of the effect of immune globulin is extremely difficult. No single physician will gather enough experience to be able to judge whether one person or another was saved from the disease by the immune serum. Even the experience for this state over a year would not permit significant conclusions. A uniform collection of data over the nation is necessary. The analysis will be difficult and equivocal, because adequate controls are not to be had. There was one certain effect of the last field trial: it is no longer possible to conduct an unbiased study of poliomyelitis immune globulin in human populations. (Am. J. Pub. Health, Sept. 1953, J. Ipsen Jr.)

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Present Status of BCG Studies

At the annual meeting of the National Tuberculosis Association 3 years ago, Dr. Robert Anderson discussed the attitude of the Public Health Service toward BCG vaccination. He pointed out the wide differences of opinion on many questions about BCG and its use; the recurrent theme throughout his talk was how little was really known about BCG--how little solid evidence there was amid all the claims and counterclaims of its value.

Because of this, Dr. Anderson said, the Public Health Service could recommend the use of BCG only for selected groups with known high risk of exposure to tuberculous infection. Tuberculosis has been declining sharply for many years and there was no reason to think that it would not continue to decline, perhaps even more rapidly. Moreover, it was not clear that the advantages of using BCG would outweigh the disadvantages of losing the tuberculin test as a diagnostic and case-finding tool. It was believed that mass vaccination programs in this country could be justified only for the purpose of making carefully documented studies to determine the value of BCG in tuberculosis control.

That was not a recommendation to be made lightly, in the face of strong popular belief in BCG and its widespread use abroad. It was not a recommendation which could be made without an obligation to make known any indication that it should be changed. Nevertheless, about the only rea-

son for changing the recommendation would be decisive evidence of the effectiveness of BCG in human beings. A number of groups in different parts of the world, including the Public Health Service, are actively trying to find such evidence. This report describes briefly the several large-scale evaluation studies undertaken by the Service and presents the first preliminary results of these studies.

The first study was started in 1947 in Muscogee County, Georgia, a community with a population of approximately 100,000 persons. In the spring of 1947, the entire school population was tuberculin tested, and half of the nonreactors were vaccinated. Three years later, in 1950, the BCG program was made part of a mass survey of the whole population, who were invited to have chest roentgenograms, tuberculin tests, and BCG vaccination. Approximately 10,000 school children were included in the early program; about 60,000 of the general population were added in 1950. Muscogee County is a reasonably typical community with a tuberculosis mortality rate somewhat below that of the rest of the country. The program was directed by a full-time Public Health Service physician who, in cooperation with the practicing physicians, was able to ensure accurate diagnosis and efficient reporting of cases and deaths from tuberculosis.

The second Public Health Service program was among the American Indians, where the prevalence of tuberculosis is many times higher than in the rest of the country. The field work of this cooperative undertaking was carried out in 1949 by the Bureau of Indian Affairs and included a high proportion of the Indian children attending Federal and mission schools in the continental United States. The number of children under study was 27,000.

The third program was in Puerto Rico, where the field work of testing and vaccinating was begun in the fall of 1949 and completed in the spring of 1951. It was a cooperative undertaking with the Insular government and was offered to all of the estimated 400,000 children attending school on the island. Although the field teams visited almost every school on the island, only about one-third of the expected number of children actually participated. Even so, it was expected that the high tuberculosis mortality rate in Puerto Rico might give, fairly soon, an indication of what BCG could do. The total number of children under study was 165,000, including 18,000 pre-school children.

A fourth study was undertaken in a special group, 20,000 mental patients of all ages in state institutions in Ohio.

In the first 3 studies, about half of the populations were tuberculin reactors and not eligible for vaccination, leaving the other half to be divided into the vaccinated and control groups. The division, however, was different in each study: in Georgia, one-half of the persons were vaccinated; in Puerto Rico, 2 of 3; and among the Indians, 3 of 4. Of the 20,000 Ohio mental patient, three-fourths were already reactors, leaving just over 5,000 eligible for vaccination. In this group, 6 of 7 were vaccinated.

The total number of persons included in the four studies was 282,000: 87,500 vaccinated, 50,500 controls, and 144,000 tuberculin reactors. The nonreactors were subdivided into vaccinated and control groups by strictly unbiased methods which ensure that the two groups are entirely comparable. The stage thus was set for several large-scale tests of what BCG could accomplish as a broad public health measure.

It was no small task to carry the studies this far--to tuberculin test and vaccinate, to make accurate individual records, and to set up the necessary statistical files or rosters. Now, these studies are in the follow-up phase, matching current tuberculosis mortality and morbidity reports with the rosters and, insofar as possible, checking the accuracy of these reports.

What conclusions can be drawn, now, from all of this work? First--and all four studies agree on the point--a very large proportion of the tuberculosis which appeared in each population during the first few years after the vaccination program occurred in the group who were not vaccinated because they had already been infected. This implies that mass vaccination, even if BCG is effective, cannot be expected to have a large and immediate influence on tuberculosis mortality and morbidity rates.

The second major point more or less follows. So little tuberculosis has occurred among those eligible for vaccination, whether or not they were vaccinated, that the number of cases and deaths is still too small to provide any definite evidence on the effectiveness of BCG. It is possible that, in the Indian and Puerto Rican mortality data, there may be early signs that BCG, under certain circumstances, could be useful in tuberculosis control. On the other hand, it is also true that in none of the morbidity comparisons is there any evidence of a beneficial effect of BCG.

The third point is that these studies do not indicate that tuberculosis in this country would be more effectively controlled by adding mass vaccination programs. Muscogee County in Georgia may not be entirely representative of the whole country but, because the effect of the vaccination program there is imperceptible, it seems that there is little reason to expect very different results in other communities.

Neither these studies nor those in recent reports by others indicate a need for changing the Public Health Service recommendations of 3 years ago. (Am. Rev. Tuberc., Sept. 1953, C. E. Palmer and L. W. Shaw)

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The printing of this publication has been approved by the Director of the Bureau of the Budget, June 23, 1952.

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Vaccination Against Influenza

As part of a continuing program by the Commission on Influenza, Armed Forces Epidemiological Board, for the evaluation of influenza virus vaccine, a study was instituted at the Wayne County Training School, Wayne County, Mich., in November 1951. In March 1952, an epidemic of influenza B occurred at this institution. The experience was thought to be of interest for the following reasons: (a) The subjects of the study were primarily children and some immunological phenomena occurred which are discussed in relation to age; (b) previous reports as to the efficiency of vaccination against influenza B were based on studies made of completely vaccinated populations compared with unvaccinated populations; (c) adequate protection was obtained, although the epidemic strain showed certain immunologic differences from the strain contained in the vaccine.

An epidemic of influenza B occurred in a vaccinated and control population of children and adolescents 3.5 months after administration of a monovalent vaccine containing only the Lee strain of type B virus. The incidence rate was significantly higher in the younger children than in the older ones. The cases in both the vaccinated and control groups occurred predominantly in those who had low antibody levels. The influenza virus, type B strain, isolated during the epidemic was shown to be antigenically different from the Lee strain used in the vaccine.

That a significant protection against influenza B was conferred by vaccination was clearly demonstrated, the observed protective ratio being 2.7 to 1. The sera of the cases arising in the B vaccinated group had acute-phase antibody contents to type B virus not markedly different from those of the control cases. Although the vaccine had been known to have given a good serologic response at 2 weeks, by 6.5 months after vaccination a marked fall in antibody content had occurred. The cases of influenza B in the vaccinated group appeared, then, to be that part of the group whose antibody content fell below a protective level and were selectively attacked by the disease. Reasons are presented to support the conclusion that this marked fall is the result of lack of previous experience, a function of age, with the antigen. (Am. J. Hyg., Sept. 1953, A. V. Hennessy, E. Minuse, F. M. Davenport, and T. Francis, Jr.)

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Aureomycin Dressing

This article presents the results of a study of the use of a new antibiotic dressing in the treatment of surface wounds such as burns, skin graft donor sites, abrasions, excoriations, avulsions, and ulcers. Such wounds, especially if they involve a large area, present a special problem from the standpoint of control of infection and early closure. Systemic

antibiotic therapy is not ideally suited for the treatment of local infections because effective concentrations of the drug are often not obtainable locally. Moreover, the possibility of side reactions and the cost of treatment are disadvantages to prolonged systemic therapy. If infection can be controlled and healing promoted by local therapy, considerable advantage may be gained.

There are several antibacterial agents that can be used on the skin; there are fewer that can be effectively and safely used in a wound. For example, the mercurials can be used on the skin, but in wounds they are subject to inactivation by serum proteins. The more active chemical antiseptics interfere with wound healing and epithelization. In more recent years, the sulfonamides were also advocated for topical application. They were finally largely discarded for this use, however, because of their sensitizing effect and especially the sodium salts like sodium sulfadiazine, because of their interference with epithelization, probably due in part to their marked alkalinity. They may also adversely affect urinary output. Penicillin has also been used to a considerable extent, but reactions have frequently been observed and it is relatively unstable, being subject to destruction by bacterial enzymes and otherwise. Furthermore, it is restricted in its antibacterial activity as compared to the newer, broad spectrum antibiotics. Thus topical antibacterial therapy in wounds up to the present time has left something to be desired.

The development of aureomycin affords a new approach in the field of local antibacterial therapy for the following reasons: (1) The drug is substantially nonsensitizing; (2) it has as broad an antibacterial spectrum as any other known safe drug; (3) to date the development of bacterial resistance to this drug has been relatively uncommon; (4) it is relatively stable in appropriate vehicles and is not destroyed by bacterial enzymes; (5) it is of benefit in various pyogenic and other infections of the skin and thus may control dermatoses often seen at wound edges; and (6) in proper usage it does not irritate or interfere with wound healing and epithelization.

One of the developments in local therapy is an aureomycin dressing (8 by 12 inches) comprising 44 by 36 mesh sterile surgical gauze impregnated with a base of bland hydrocarbon oils, cholesterol esters, and a creaming agent, and containing a dispersion of micropulverized aureomycin hydrochloride (320 mg. per dressing). The base will absorb water to form a stabilized cream or emulsion. It thus tends to keep the wound dry and consequently avoids maceration. Suitable compounding of the ingredients yields a base that does not become too thin during use and does not disperse too readily, thus minimizing adherence to the wound with consequent disruption upon removal, and avoidance of abrasion of the healing wound which may destroy new epithelium.

Bacteriologic study of 376 cultures from 77 cases, including 65 burns and 12 ulcers, showed the relative prevalence of the various bacteria in these wounds before and during the course of treatment with an aureomycin dressing.

and demonstrated suppression by the dressing of the growth of pathogenic or potentially pathogenic organisms. It may be presumed that high concentration levels of aureomycin, locally obtainable from the dressing, also resulted in a suppression of certain bacteria normally classified as resistant to the drug.

In the use of over 2,000 aureomycin dressings on a large variety of surface wounds, no untoward reactions and no interference with wound healing were observed. No other contraindications were noted by the authors as compared to use of any other dressing available.

It is the authors' impression that wounds healed with unusual rapidity under the aureomycin dressing, as one might expect when infection is controlled and in the absence of any chemical effect that would retard epithelization. Skin graft donor sites unavoidably contaminated by adjacent burn wounds healed with unusual rapidity under the aureomycin dressing.

The aureomycin dressing affords a convenient, readily available dressing offering an extra safeguard against the development of infection, which is an ever-present possibility in spite of the best possible aseptic technics. (Am. J. Surg., Sept. 1953, J.A. Tamerin, W.I. Metzger, and L. T. Wright)

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Surgical Treatment of Aneurysm of Abdominal Aorta

Aneurysms of the abdominal aorta constitute a serious and difficult problem in terms of both prognosis and therapy. Although there is some variation in survival rate as recorded by different observers, there is general agreement that it is relatively short, ranging from 6 months to 2 years in well over half the patients with only a few patients living more than several years after onset of symptoms or establishment of diagnosis. In general, treatment has not been satisfactory, and although the condition has been a challenging problem to surgeons for a long time, the various methods of surgical attack have, for the most part, not been fruitful. These methods may be classified into 3 categories: (1) those designed to promote thrombosis and fibrotic organization by partial, complete, or gradual occlusion or ligation of the aorta, by the introduction of foreign material, or by periarterial fibroblastic reaction; (2) endoaneurysmorrhaphy; and (3) extirpation of the lesion with or without restoration of blood flow. Only the last procedure may be considered promising or satisfactory because it meets the ideal objectives of surgical therapy, namely, extirpation of the diseased part and restoration of normal function. For various reasons, however, this approach to the problem has not been fully explored and has been successfully employed in only a relatively small number of cases of sacciform aneurysms or those associated with coarctation. A review of the literature reveals only one report of its successful application in a case of fusiform aneurysm of the abdominal aorta. For these reasons and because of the gratifying results

obtained with this method of therapy in 7 patients with fusiform aneurysms of the abdominal aorta, it seems desirable to report the authors' experience with the procedure, which consists essentially of resection of the aneurysm and involved segment of aorta with restoration of normal blood flow by means of an aortic homograft.

As may be observed from the case reports, the age of the authors' patients ranged from 47 to 74 years, and the aneurysms were considered of arteriosclerotic origin in all but 1, which probably was of syphilitic origin. The significance of these observations lies in the fact that neither age nor arteriosclerosis, per se, constitute contraindication to the successful application of the procedure. Like others, the authors were formerly of the opinion that the procedure would be more applicable to syphilitic lesions in which there is a tendency to produce a firm but relatively supple leathery arterial wall more suitable for suture than that involved by arteriosclerotic changes. Fortunately, this has not proved to be as serious a limiting factor as was formerly believed, the anastomotic procedure having been found technically feasible in all of the authors' cases in spite of rather extensive atheromatous changes in some. This observation assumes additional significance in the light of the recent evidence, shown by Maniglia and Gregory, indicating the diminishing incidence of syphilis and the rapidly increasing frequency of arteriosclerosis as the cause of these aneurysms:

Another important factor of surgical significance lies in the location of these lesions. In all of the authors' cases the aneurysm was situated in the segment of aorta below the origin of the renal arteries. Although in some instances it involved the bifurcation, it was possible in all cases to occlude the aorta and to secure a sufficient margin of its wall just below the renal vessels to permit resection and anastomosis. This has been a well-recognized pathologic feature of these lesions, but it may now be regarded as a fortuitous circumstance that facilitates application of this procedure.

Aortography was employed as a diagnostic procedure in 5 patients. This was done by translumbar aortic puncture with rapid injection of 20 to 25 cc. of 70% diodrast or urokon solution, and in general provided satisfactory visualization of the aorta and its tributaries. The usefulness of the procedure lies in its confirmation of the diagnosis and in providing more precise information concerning the extent and location of the aneurysm, particularly in its relation to the renal arteries and the bifurcation. It is the authors' opinion, however, that while aortography is of value in providing information of this kind, it should not replace exploratory laparotomy in the final determination of feasibility of operation.

Seven cases are reported to illustrate the procedure of resection of the aneurysm and restoration of normal function by means of aortic homograft. There was 1 death in this series, the patient dying of progressive uremia and secondary hemorrhage on the thirteenth day after operation. All the other patients tolerated the operation well and have shown excellent early results.

The aneurysms in 2 of the patients had been wrapped with polythene film containing dicetyl phosphate 13 months and 7 months respectively prior to resection. The gross and histologic findings in both cases cast much doubt on the efficacy of this treatment.

Although final evaluation of the procedure must await further observation and experiences, on the basis of the immediately gratifying results obtained in this series, it is believed that resection of the aneurysm and involved segment of aorta with restoration of continuity by means of aortic homograft is the procedure of choice in the treatment of this condition. (Surg., Gynec. & Obst., Sept. 1953, M. E. DeBakey and D. A. Cooley)

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Wounds of Dural Sinuses

This article discusses the surgical management and the neurological sequelae of 112 consecutive wounds of the brain involving major dural sinuses. The surgical treatment of these wounds might serve to suggest a feasible pattern to follow. The analysis of neurological sequelae will be inadequate at best, for in the vast majority of the author's cases the disturbances of venous circulation were associated with gross cerebral lesions.

During a 23-month period from September 1950 through August 1952, 112 consecutive casualties with penetrating wounds of the brain involving dural sinuses were treated at the Neurosurgical Detachments of the Eighth United States Army in Korea and at the Neurosurgical Center of Tokyo Army Hospital, Japan Logistical Command. They were United States soldiers and Marines and members of the United Nations Forces and of the Republic of Korea Army.

This study is limited to cases of trauma of the dural sinuses and does not include wounds affecting their tributaries. The following criteria were used to select cases for inclusion in this report: (1) transection of a sinus, (2) laceration of a sinus wall perforating the entire thickness of the wall, (3) contusion and compression of the sinus, in all but 4 cases manifested by abrasions of the outer wall with multiple bleeding points, and (4) thrombosis of an anatomically intact sinus evidenced by surgical inspection and digital palpation.

Of 112 consecutive operative cases, 7 were of multiple dural sinus injuries, resulting in a total of 124 individual sinus wounds. There were 13 deaths, a mortality of 11.6%.

The penetrating wounds of the brain were caused by shell fragments in 65 cases and by high velocity missiles in 32 cases. Two patients were struck by a rock and 2 by a blunt object. Four patients were involved in a vehicle accident. In 7 instances the mode of injury was unknown. Thirty of the 112 patients had associated wounds of the body.

There were 78 patients with a wound of the superior longitudinal sinus. The transverse sinus was involved 29 times, but 2 patients had an injury of both the right and left transverse sinus. There were 7 wounds of the torcular Herophili. The sigmoid sinus was involved in 5, and the inferior longitudinal and superior petrosal sinus each in 2 cases. One wound of the straight sinus was encountered.

Transection of the sinus occurred in 9 cases, in 6 of which the sinus was found to be thrombosed. Laceration of the wall of the sinus, of varying degree, occurred 87 times; a thrombus was encountered at time of surgery at the site of laceration 14 times. Twenty-two cases were classified as contusion and compression; in 19 of these the contusion was manifested by abrasions of the outer wall of the sinus with multiple bleeding points. A thrombus was diagnosed on the basis of surgical inspection in 1 of the 22 cases. Thrombosis of an intact sinus was encountered in 6 penetrating wounds of the brain.

Surgically significant intracranial hematomas occurred in 28 of the 112 cases. (J. Neurosurg., Sept. 1953, A.M. Meirowsky)

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Mitral Commissurotomy in the Older Aged Patient

Previous articles on the surgical treatment of mitral stenosis have reviewed its historical development, surgical technics, the indications for and results of mitral commissurotomy. Mitral commissurotomy is briefly defined as the direct surgical approach through the left auricular appendage for the correction of mitral stenosis by separating the individual anatomic leaflets of the mitral valve. Incision of the angles or commissures of the stenosed mitral orifice frequently reestablishes function of the valve leaflets without producing significant mitral insufficiency. Hence, the purpose of the procedure is three-fold: (1) to enlarge the constricted orifice, (2) to restore motion to the valve leaflets, and (3) to prevent future arterial embolization by eliminating the source of the thrombus and/or by reducing stasis in the left auricle.

This article presents the results in 20 patients between the ages of 50 and 61 (out of a total 400 consecutive cases) subjected to mitral commissurotomy. These patients have been followed for 6 months to 2 years. It will be shown that in selected patients over the age of 50 years intracardiac surgery can be performed without unusual morbidity or mortality, and significant improvement in functional capacity can be expected despite the chronological age.

There was no increase in morbidity in these patients following mitral commissurotomy, the average postoperative hospital time being 15 days. With the exception of 1 patient who had undergone amputation of the left leg, all patients were discharged from the hospital between 10 and 21 days after

surgery. There was no reactivation of rheumatic infection, and there has been no recurrence of hemoptyses or embolic phenomena.

The operative results in 6 patients were classified as excellent, the patients having returned to a normal productive life compatible with their age group without obvious cardiac disability. These patients are carried on a maintenance dose of digitalis, and, even though they have progressively increased their activity, there has been no necessity for excessive salt restriction or the use of mercurial diuretics. Nine are believed to be objectively and subjectively improved as evidenced by their resumption of almost normal activity. These patients, in addition to the daily digitalis, have remained on a low sodium diet and on occasion mercurial diuretics have been used. Their progressive downhill course has been successfully terminated or reversed, some to gain a high level of efficiency and others to remain on an improved plateau.

Three of the twenty patients have not been essentially improved by the operation. One of these had a dynamic mitral insufficiency and marked right ventricular enlargement. The valve of another was fixed and heavily calcified so that adequate separation of the valve leaflets was impossible. The third should have had a satisfactory result, based on the condition of her valve and the presence of only moderate ventricular enlargement, but she did not follow the instructions of her physician and a beneficial response has been immeasurably, perhaps permanently, delayed.

The remaining 2 cases died 3 months and 8 months after commissurotomy. Before operation both had been in chronic congestive heart failure for over 2 years with marked hepatomegaly and marked cardiomegaly. In 1, auricular fibrillation had been present for over 4 years and in the other a normal sinus rhythm was present. It was striking that these 2 patients during the immediate postoperative state appeared to be improved. However, with increased physical activity, irreversible congestive heart failure resulted even though a technically satisfactory commissurotomy was performed.

In the cases presented here, as well as in the total 400 patients, an unexpected finding was the constancy of the size of the stenotic mitral valve inlet. Whether the symptoms were minimal or marked and of long duration, the orifice rarely varied in diameter from 0.5 to 1.0 cm.

The authors believe that there is a "critical point" of orificial contraction at which time symptoms appear, and thereafter little change in the diameter of the valvular opening takes place. This is in contrast to the progressive pathologic changes in the valve leaflets, chordae tendinae, and papillary muscles, which roughly parallel the stage and duration of the disease. It appears to the authors that if this is true, much of the success of the commissurotomy lies in recognizing when this "critical point of contraction" is reached. It is at this time, when progressive symptoms first develop, that the valve offers the best opportunity for maximal functional restoration.

Morbidity and mortality are comparable with that seen in the younger age group, therefore such patients should not be denied surgery because of the factor of chronologic age alone. (Circulation, Sept. 1953, O. H. Janton, R. P. Glover, and T. J. E. O'Neill)

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Clinical Evaluation of Succinylcholine Chloride as a Muscle Relaxant

The most significant development in anesthesiology during the past decade has been the introduction of various natural and synthetic agents which are capable of producing muscular relaxation by interrupting neuromuscular transmission of impulses. The introduction of a purified form of curare as a muscle relaxant by Griffith in 1942 opened a new corridor for investigation and research. Since then such synthetic neuromuscular blocking agents as Flaxedil, Mytolon Chloride, decamethonium bromide (Syncurine) have been synthesized. These and other agents have received more or less wide clinical application, but none have been entirely free from various disadvantages or undesirable side effects.

Recently a new ultrashort-acting depolarizing type of muscle relaxant was introduced to anesthesiology. This agent known as succinylcholine iodide was synthesized free of impurities in 1951 by Löw and Tammelin. Later, a more desirable agent succinylcholine chloride (Anectine) was prepared.

The advantages of succinylcholine chloride are: (1) very rapid production of maximum muscular relaxation (15 to 30 seconds); (2) the degree and extent of muscular relaxation can be accurately controlled with this agent; (3) clinically, at least, there appears to be a wider margin of safety between muscle relaxation and respiratory arrest than is the case with other muscle relaxants; and (4) it does not appear to have any undesirable side effects, other than those involving the respiratory system, and it is apparently rapidly hydrolyzed to harmless end products.

No real disadvantages became apparent in this series but the fact that vigilance and careful attention must be paid to the administration of this muscle relaxant because of its potency and rapid hydrolysis might be considered by some to be a relative disadvantage.

In this series the author encountered no neurologic sequelae and there were no deaths or any other postoperative toxic effects which could be attributed to succinylcholine chloride.

This series in which succinylcholine chloride (Anectine) was used as a muscle relaxant during anesthesia has been extended to include over 900 cases. No changes have been made in the technics of administration. In the last 500 cases, however, there has been a tendency to use slightly larger doses for laryngeal intubation, in most instances 40 to 50 mg. instead of 30 to 40 mg.

In this extended series the earlier clinical impressions were all corroborated and no neurologic sequelae, postoperative toxic effects or deaths were encountered which could be attributed to succinylcholine chloride. The author believes that in most respects it is superior to any other muscle relaxant available at the present time. (Am. J. Surg., Sept. 1953, P. C. Lund)

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Etiology and Management of Spontaneous Pneumothorax

In order to establish a satisfactory definition of spontaneous pneumothorax it was necessary first to review the cases "automatically" included under this diagnosis and then to evaluate their supposed, if not proved, pathogenesis. It was concluded that the entity could best be described as a pneumothorax resulting from a bronchial tree-pleural space communication not established by direct laceration of intervening tissues.

It is difficult in many instances to establish the exact pathogenesis of spontaneous pneumothorax. Had surgery been performed the diagnosis would have been apparent. In 64% of the authors' cases the condition was labeled "idiopathic." Certain factors are known to be of etiological significance, and cases can be classified most conveniently under the following headings: (1) structural cystic lung changes, (2) inflammation, (3) emphysema, (4) trauma, and (5) idiopathic pneumothorax.

In many, if not all, of these cases of spontaneous pneumothorax the condition was caused by rupture of subpleural blebs or bullae which may have been congenital or the result of local structural changes produced by obstructive emphysema, pneumonitis, cystic bronchiectasis, or tuberculosis. Tuberculosis is an infrequent cause (6%). A history of indirect trauma preceding the collapse is unusual.

Spontaneous pneumothorax with less than 25% collapse should be treated conservatively, the patient being closely observed for progressive collapse. On the other hand, if collapse is greater than 25%, active surgical intervention is the treatment of choice.

Insertion of a Pezzer catheter into the pleural cavity with water-seal drainage can easily be performed with the patient under local anesthesia. The advantages of such treatment are more rapid reexpansion of the lung, early relief of symptoms, prevention of complications, reduction in hospitalization time, and earlier return to economic productivity.

Thoracotomy and definitive surgery, such as resection of blebs, segments, or lobes, are indicated in progressive hemopneumothorax, persistent bronchopleural fistula, and multiple recurrences. (Arch. Surg., Aug. 1953, R. L. Rapport, A. A. Thurlow, Jr., and K. P. Klassen)

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Renal Resection for
Advanced Hemihydronephrosis and Cystic Hydrocalyx

The laudable aim of conserving and salvaging renal tissue has resulted in an ever-increasing number of heminephrectomies for disease limited to one segment of double kidneys and of segmental resection for disease limited to one or the other pole of the unipelvic kidney. Such conservatism can be overdone, leading to recurring illness, invalidism, prolonged periods of hospitalization, and economic disaster for the patient and his family. Extreme caution must be observed when making the decision to use conservative measures in these cases. Among the criteria to consider are: (1) Sufficient function must be present in the preserved organ to make the procedure worthwhile; (2) the likelihood of recurrent disease in the preserved element must be minimal; and (3) the adequacy of the blood supply to the preserved element must be unquestioned because anoxic necrosis may lead not only to infection and secondary hemorrhage but also to eventual development of hypertension.

This article presents a method of heminephrectomy and partial resection of the kidney applicable to certain cases, namely, advanced hemihydronephrosis and cystic hydrocalyx, which best assures the fulfillment of the third criterion.

The technique the author presents is extremely simple. It is almost completely bloodless. It does not compromise normal parenchyma. It does not endanger vascular branches entering the normal renal segment. There is no danger of perforating into a calyx of the normal segment with resultant urinary fistula. The thin-walled sac is incised and its contents aspirated. If the vascular branches entering this segment are easily observed and isolated, they are clamped, cut, and ligated. If not, the sac is incised along the convex border and the flaps then are excised along their junction with the normal parenchyma, leaving a narrow cuff. As the medial border is approached, traction on the flaps exposes the vessels very clearly, and they can be ligated without danger.

No attempt is made to excise that portion of the sac adherent to the normal segment. A running hemostatic suture of fine plain catgut is placed around the cut margin, uniting the mucosal remnant to the capsule. One then proceeds with the isolation of the pelvis and ureter, always a delicate procedure due to their adherence to their normal fellows.

The same principles are followed in the excision of the cystic hydrocalyx. The thin-walled sac is excised at its junction with the normal parenchyma. A running hemostatic suture is placed along the cut margin. The patent infundibulum is closed by incising the mucosa around it and closing it with 2 or 3 horizontal mattress sutures. (Surg., Gynec. & Obst., Sept. 1953, R. R. Landes)

Paroxysmal Nocturnal Hemoglobinuria

Paroxysmal nocturnal hemoglobinuria (PNH) is a disease of the hematopoietic system manifested by chronic hemolytic anemia, leukopenia, and thrombocytopenia. Hemolytic crises are common, and with the crises, hemoglobinuria appears characteristically during sleep. In addition to anemia patients frequently have recurrent infections, especially of the respiratory and urinary systems, headaches and bouts of abdominal pain, and venous thrombosis in the extremities, the brain, and the portal system.

An hereditary or constitutional basis for PNH has not been demonstrated. It is a rare disease though not so rare as is generally believed. It is estimated that the incidence is perhaps 2 cases per million. PNH has not been known to occur in families. A patient reported by Dameshek was one of identical twins. Her sister remained well. The author has studied a patient, now dead, who was 1 of 12 siblings. His parents and all of his brothers and sisters were examined and their blood tested for PNH with negative results. It seems highly unlikely that PNH is hereditary. The concept of "constitutional predisposition" is vague and one hesitates to evoke it. Nevertheless, of 15 cases seen by the author all tended to be of a physical type known to anthropologists as "hypermorphic" (the legs long in proportion to height; bony, narrow arms and legs; slender body; narrow nose, shoulders, thorax, and hips). The patients were not "pure" hypermorphs, but this configuration predominated. Another impression of the author's is that the body hair in males with PNH often shows a female distribution. The etiologic significance of these observations is not known.

Age, sex, and race seem to play no part. PNH has been observed in children less than 5 years of age, indeed in one instance it appeared before the child's first birthday. This seems to eliminate the disease from the classification of those with a degenerative etiology. The third and fourth decades are the most common times for the onset of symptoms. The disease has appeared after the age of 50 and has been observed in a man of 72. Distribution between the sexes is about equal. PNH has been observed in the populations of almost every country in Europe and in most of the countries of the Americas. It has occurred not only in Caucasians and Hebrews but also in Negroes, Chinese, Filipinos, Asiatic Indians, American Indians, and Egyptians.

Nutritional deficiency has not been eliminated as a possible cause of PNH. It is interesting to regard the parallel that exists between this disease and pernicious anemia (avitaminosis B₁₂). They are the two known forms of acquired hemolytic disease that involve defectively constituted red cells rather than injury of red cells by some toxic, plasmal, or infectious agent. Both are diseases of the bone marrow involving a relative inhibition of hemoglobin synthesis. Pancytopenia exists in both. Here the parallel ends. Pernicious anemia, like other nutritional diseases, is pro-

gressive and fatal unless the deficiency is corrected; PNH is not progressive and, in fact, often tends to improve during the years. Pernicious anemia is a disease not of the hematopoietic organ alone, but of the entire body involving the gastrointestinal system, the central nervous system, the heart, and the liver; so far as is known PNH, as a primary disease, involves only the tissues of hematopoiesis. Other symptoms, as pointed out in this review, are probably secondary. PNH has never been improved by the use of B₁₂ or other vitamins or minerals. The possibility of its being due to an excess of some nutritional factor has not been investigated.

Endocrine dysfunction has not been shown to play any part in the etiology of PNH. Patients with PNH have been known to have diabetes and myxedema and hyperthyroidism, but these disorders were probably coincidental or perhaps were a result of repeated thrombosis. The administration of all known hormones has been tried at one time or another without benefit.

Neoplastic disease of the reticuloendothelial system is ruled out by the prolonged survival of many patients. Some have been known to have the disease for as long as 35 years.

Infection as a cause of PNH has not been eliminated. It is sometimes difficult to establish the onset of PNH. After a patient has become ill it is often possible by careful questioning to learn that his disease existed for months or even years before anemia produced symptoms or some accident precipitated a bout of hemoglobinuria. On the other hand there are cases where the disease began abruptly in a person in good health. When this occurred, a respiratory infection has often appeared to be the precipitating factor. It may be of some significance that in about 10% of the patients reported in the literature a previous history of malaria is mentioned. It is not suggested that PNH is a bizarre expression of viral or plasmodial infection. It is possible, however, that PNH may represent a perversion of the immune response to such infections. It is known that infections may permanently alter those parts of the reticuloendothelial system that produce antibodies. PNH appears to be a permanent alteration of those parts of the reticuloendothelial system that produce the proteins of the stromata of blood cells. (Blood, Sept. 1953; Lt. Col. W.H. Crosby, MC, USA)

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Radiation Hazard During Angiocardiography

Angiocardiography, because it involves multiple roentgenographic exposures with the injecting physician and patient in close proximity, constitutes a potential radiation hazard. There have been only a few studies of this problem. Accordingly, the authors measured the radiation received by patient and physician during angiocardiography and investigated the effectiveness of their own methods of protection.

This study demonstrates that the amount of scattered radiation received by the radiologist during angiocardiology as performed at The New York Hospital is not excessive. As many as 15 angiocardiological injections a week may be performed before the dose to the hands reaches the weekly permissible total body dose of 300 mr as recommended by the National Committee on Radiation Protection. Many more injections may be performed before 1.5 r on the hands is reached, which is the limit in this region as given by the International Commission on Radiological Protection in its recommendations. However, it is always advisable to keep the radiation at a minimum, and the use of the smallest possible cone is of great value in this respect. The lead fiber glass gown is a useful adjunct in protecting the radiologist's arms, legs, and back. It should never be used alone, but only in conjunction with the conventional lead rubber apron to protect the trunk. The use of cumbersome lead shields between the patient and the person who makes the injection appears to be unnecessary. Similarly it is not necessary to employ artificial injection devices for angiocardiology. Machines are poor substitutes for the hands of a skilled physician. Radiation dosage received by the patient during angiocardiology is apparently not high enough to endanger marrow or cause skin damage, but it should be borne in mind that many patients also receive many roentgenographic examinations and the cumulative dosage may be high.

These results show that the procedure can be performed with safety, but it is reemphasized that the above measurements apply only to angiocardiology accomplished as described. This is attested to by the different values obtained by other investigators. Angiocardiological techniques vary greatly and therefore warrant individual assessment of the hazards involved. (Am. J. Roentgenol., Sept. 1953, W. Dubilier, Jr., H. W. Burnett, C. T. Dotter, and I. Steinberg)

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Reexamination of Temporary Retired Naval Personnel

By the end of June 1953, records of periodic examinations had been processed for approximately 2,400 individuals who had been placed on the Navy's temporary disability retired list during the first 2 years of the Career Compensation Act of 1949. These individuals are subject to reexamination at least every 18 months to determine whether the disability is of a permanent nature. Under the provisions of the Act, an individual is placed on temporary retirement when accepted medical principles indicate that his disability may be of a permanent nature. Consequently, individuals on the temporary retired list are those whose disability rating may change during the 5-year period within which final determination must be made as to whether the individual is to be permanently retired, severed, or returned to duty.

As a result of these periodic examinations, the status was changed for 472 of the individuals on the temporary disability retired list--approximately 20% of those reexamined. The remainder were continued on the temporary list, subject to further periodic check up.

Over one-half of the individuals removed from the temporary disability retired list were placed on the permanent retired list. The majority of these had disabilities rated 100% at the time of temporary retirement. However, 3 cases with less than 30% disability at the time of temporary retirement were permanently retired upon reexamination. These 3 cases were eligible for disability retirement with less than 30% disability because they had 20 years or more of active service.

Of those removed from the temporary retired list 209 were separated with lump-sum severance pay. This is the disposition provided for those with less than 30% disability, who, under the provisions of the Career Compensation Act of 1949, are not eligible for disability retirement if they have less than 20 years of service. In other words, within 18 months the disability ratings for this group has been reduced to below 30%. Most of the individuals involved in this change were borderline cases--those with ratings of 30% at the time of temporary retirement.

Only 25 individuals were returned to duty following reexamination. Included were 8 individuals whose disability ratings were reduced from the original rating of 100% to 0% upon reexamination. (Statistics of Navy Medicine, Aug. 1953)

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Four Dental Training Billets
Available at the U. S. Naval Dental School

Dental officers who have completed Residency Training in Oral Surgery or Advanced Prosthodontic Training are eligible to apply for the Specialized Course in Oral Surgery or the Specialized Course in Prosthodontia, respectively. These courses are of 6 months' duration and will begin in the early part of January 1954 at the U. S. Naval Dental School, National Naval Medical Center, Bethesda, Md. Two training billets are available in each of the courses. Applications should be submitted in accordance with Article 6-82, Manual of the Medical Department, and should arrive in the Bureau of Medicine and Surgery not later than 2 Nov 1953. (DentDiv, BuMed)

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From the Note Book

1. Rear Admiral Lamont Pugh, Surgeon General of the Navy, has been elected to Honorary Fellowship by the American College of Hospital Administrators. The President of the College, Fraser D. Mooney, M. D., during the ceremony presented to Admiral Pugh a suitably inscribed certificate and a small golden key, a memento of the occasion. (TIO, BuMed)
2. The first lecture of the 1953-54 Guest Lecture Series, under the auspices of the Naval Medical School was held in the auditorium of the National Naval Medical Center, Bethesda, Md., 25 Sept. 1953. Doctor I. S. Ravdin, Professor of Surgery at the University of Pennsylvania Medical School delivered the lecture. His subject was "Some Problems Facing Military Medicine." (TIO, BuMed)
3. Doctor Howard T. Karsner, Medical Research Advisor to the Surgeon General of the Navy sailed from New York City on 17 Sept. 1953. Dr. Karsner will consult with staff members of the Royal Naval Physiological Laboratory in London. He has also scheduled a visit with Professor G. R. Cameron who is holding a special meeting of a subcommittee of the Royal Naval Personnel Research Committee in order that Dr. Karsner may be informed of recent research work carried out in that field in England. Following the various meetings in England, Dr. Karsner will attend the International Congress of Leprosy as a representative of the Surgeon General of the Navy. The Congress of Leprosy is being held in Madrid, Spain, 3-10 Oct. 1953. Dr. Karsner is Chairman of the Advisory Medical Board of the Leonard Wood Memorial (American Leprosy Foundation). (TIO, BuMed)
4. Outstanding military and civilian pathologists attended a week-long seminar on "Pathology of Ionizing Radiation" which got underway 21 Sept. at the Armed Forces Institute of Pathology. Brig. Gen. Elbert DeCoursey, MC, USA, Director of the AFIP, welcomed the visiting pathologists to the opening session, and conducted a two and a half hour critique on 25 Sept., the last day of the conferences. Maj. Marvin D. Blackburn, MC, USA, was chairman of the seminar. (TIO, AFIP)
5. Lieutenant Louis E. Dean (MSC) USN, of the Washington Branch, Materiel Division, has been awarded the Letter of Commendation with Ribbon and Combat "V" for outstanding performance of duty in Korea. The Surgeon General of the Navy, Rear Admiral Lamont Pugh, presented the award to Lt. Dean on 4 Sept. 1953, in ceremonies held in the Surgeon General's office. (TIO, BuMed)

6. Rear Admiral A. H. Dearing (MC) USN, Ret. has been appointed Executive Secretary of the College of American Pathologists. (WRMS, 7 Sept. 1953)
7. Recommended for all naval officers, a new correspondence course, Security of Classified Matter, NavPers 10975, is now available at the Naval Correspondence Course Center. The course which discusses security regulations and the correct manner of handling classified matter, consists of 3 assignments and is evaluated at 6 points credit. (Naval Reservist, Sept. 1953)
8. Correct operative technic is as important in surgery of the hand as is rigid asepsis. The surgeon must know not only proper methods of repairing structures, of suturing nerves and tendons, of reducing fractures, of grafting skin, and applying pedicles, but he must also know how to handle tissues gently, he must secure adequate visualization without rough retraction, he must secure and maintain a dry operative field. He must accustom himself to the use of small instruments, needles, and sutures, and he must be willing to take the time to be careful. (Industrial Medicine & Surgery, Sept. 1953, M. L. Mason)
9. Oral administration of saline (80% sodium sulfate, 20% magnesium sulfate) during cholecystography has caused improved visualization of poorly functioning gallbladders with calculi. (Am. J. Roentgenol., Sept. 1953, P. S. Friedman and L. Solis-Cohen)
10. A case of myocardial infarction is described in which 10 times the prescribed dose of procaine amide (5.0 gm.) was inadvertently administered. Recovery was uneventful and the toxic symptoms disappeared 8 hours later. No treatment was administered. (Am. Heart J., Sept. 1953, J. E. Doherty, W. S. Abbott, and J. C. Davis, Jr.)
11. Some criteria for the use of antibiotics for surgical infections of the gastrointestinal tract are presented in Surgery, Gynecology, and Obstetrics, Sept. 1953, Lt. Col. E. J. Pulaski, MC, USA.
12. A report of the results obtained by surgical interruption of pathways at several levels in the central nervous system for relief of severe dystonia muscularum deformans is presented in the Journal of Neurosurgery, Sept. 1953, W. B. Hamby.
13. Simple effective procedures for reclaiming asbestos from discarded pipe insulation have been developed by E. W. Zimmerman of the National Bureau of Standards. The recovered asbestos is unchanged chemically. It appears well suited to further use as electrical and heat insulation, for making asbestos paper and as a filler in molded plastic compounds. (Technical News Bulletin, National Bureau of Standards, Sept. 1953)

Recent Reports Issued by Naval Medical Research ActivitiesNaval Medical Research Institute, NNMC, Bethesda, Md.

1. Research Progress Report, 1 Jan--30 June 1953.
2. Oral Manifestations of Ionizing Radiation. II. Effect of 200 KV X-ray on Rat Incisor Teeth When Administered Locally to the Head in the 1500 r Dose Range. NM 006 012.04.62, 19 May 1953.
3. Reversible Association Processes of Globular Proteins. IV. Fluorescence Methods in Studying Protein Interactions. NM 000 018.06.25, 22 May 1953.
4. Summary of the Histo-Chemical Techniques Employed by the Pharmacology Division of the Naval Medical Research Institute in the Study of Toxic Changes Produced by Total Body X-Irradiation and by Drugs. Memo Report 53-9, NM 006 012.04, 27 May 1953.
5. Reversible Association Processes of Globular Proteins. III. Thermodynamics of the Association of the Insulin Monomer. NM 000 018.06.24, 22 May 1953.

Aviation Medical Acceleration Laboratory, NDAC, Johnsville, Pa.

1. Development of Biologic Research Apparatus for Use in Acceleration and Deceleration Studies. Phase I--The Evaluation of Pressure Transducer Systems. NM 001 060.07, 15 Jan 1953.
2. Preliminary Investigation Into the Study of the Fundus Oculi of Human Subjects Under Positive Acceleration. Phase III. NM 001 060.12, 1 July 1953.

Medical Research Laboratory, Naval Submarine Base, New London, Conn.

1. List of Red Filters for Dark Adaptation. Memo Report 53-10, NM 003 041.51, 8 July 1953.

Naval Medical Research Unit No. 4, Great Lakes, Ill.

1. Studies on the Relationship of Neutralizing and Hemagglutination Inhibition Antibodies Against Influenza B Viruses. NM 005 051.06.04, 7 July 1953.
2. Parasitological Study on Navy Recruits. NM 005 051.14.02, 20 Jan 1953.

Naval Medical Field Research Laboratory, Camp Lejeune, N. C.

1. Quarterly Report of Miscellaneous Tests and Minor Investigations, July-Aug-Sept 1953, Part I. NM 007 083.03, Aug. 1953.

U. S. Naval School of Aviation Medicine, NAS, Pensacola, Fla.

1. The Transfer of Habituation to Rotation With Respect to the Magnitude of the Vestibular Stimulus. NM 001 063.01.34, 10 July 1953.
2. The Retention of Effects of 'Massed' and 'Distributed' Vestibular Stimulation as Indicated by the Duration of the Oculogyral Illusion. NM 001 063.01.33, 1 July 1953.

3. Residual Effects Attributable to the Semicircular Canals Following Unilateral Labyrinthectomy in Man. NM 001 059.01.36, 21 May 1953.
4. Electron Microscopic Structure of Aortic Elastin. NM 001 057.10.02, 15 July 1953.
5. A Simplified Method of Obtaining Sums of Squares and Sums of Products for Use in Statistical Formulae. NM 001 057.16.03, 2 July 1953.
6. Attitudes Toward Entering Training as Predictors of Motivation Among Student Aviators. NM 001 058.05.06, 7 July 1953.
7. The Electron Microscopic Structure of the Rat Aorta. NM 001 057.10.03, 25 July 1953.
8. The Effect of Red Light on the Absolute Visual Threshold. NM 001 059.28.02, 3 Aug 1953.

U. S. Naval Medical Research Unit No. 3, Cairo, Egypt

1. Ticks (Ixodoidea) and Their Medical Relations in the Near East. NM 005 050.29.15, 1953.
2. Cortisone and Combined Antibiotic Therapy of Acute Brucellosis Melitensis. NM 007 082.12.04, 1953.
3. Research Progress Summary Report, Period 1 Jan 1953--30 June 1953.
4. A Rapid Permanent-Mount Stain Technique for the Diagnosis of the Intestinal Protozoa, A Preliminary Report. NM 005 050.01.05, 1953.
5. Lymnaea stagnalis in Egypt. NM 005 050.44.01, 1953.
6. The Mosquitoes of the Yemen (Diptera, Culicidae). NM 005 050.39.29, 1953.
7. Summary of the Research Program of the U. S. Naval Medical Research Unit No. 3, Cairo, Egypt (Jan 1946--June 1953)
8. A Preliminary Annotated List of Ticks (Ixodoidea) of the Anglo-Egyptian Sudan. NM 005 050.29.02, 1953.
9. Development of the Cercaria of Echinoparyphium recurvatum (Linstow, 1873) Lühe, 1909, with Emphasis on Excretory System. NM 005 050.11.01, 1953.
10. Pathogenicity of Dientameba fragilis. NM 007 082.20.02, 1953.
11. Isolation of Shigella and Salmonella Organisms from Nile Fish. NM 005 083.06.03, 1953.

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Navy Medical School, National Naval Medical Center, Bethesda 14, Maryland, giving full name, rank, corps, and old and new addresses.

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BUMED INSTRUCTION 6710.7A

27 Aug 1953

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Medical Corps Personnel Regularly
Assigned

Subj: Yellow fever vaccine; procurement of

Ref: (a) BuMed Inst. 4220.2
(b) BuMed Inst. 6230.1
(c) Art. 22-25, ManMedDept

This instruction sets forth the procedures to be used in the procurement of yellow fever vaccine. BuMed Inst. 6710.7 is cancelled.

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BUMED NOTICE 12225

10 Sep 1953

From: Chief, Bureau of Medicine and Surgery
To: All Naval Hospitals

Subj: Quarters, heat, light, household equipment, subsistence and laundry furnished certain civilian employees of the Medical Department; utilities and maintenance furnished Navy and Marine Corps exchanges and commissioned officers messes (open)

Ref: (a) Bureau of the Budget Circular No. A-29 of 16 July 1952
(b) SecNav Inst. 5400.3
(c) NavCompt Manual, Vol. 3, Par. 033011
(d) NCPI 225
(e) Hospital Accounting Instructions, NavMed P-1296

This notice provides a current reference list of regulations and policies governing subject services at naval hospitals. BuMed C/L 51-39 is cancelled.

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BUMED INSTRUCTION 7303.6

14 Sep 1953

From: Chief, Bureau of Medicine and Surgery
To: All Shore Stations (except Hospitals) Having Medical and/or
Dental Personnel

Subj: Accounting documents furnished by Fiscal Officer

Ref: (a) NavComp Manual, 032029-4
 (b) BuMed Inst. 7303.2
 (c) BuMed Inst. 7000.1
 (d) NavComp Manual, 048300

This instruction promulgates guide lines for Medical and Dental Departments of naval activities to use in requesting accounting documents from the Fiscal Office performing their allotment accounting.

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BUMED INSTRUCTION 6150.11

16 Sep 1953

From: Chief, Bureau of Medicine and Surgery
 To: All Naval Hospitals and Naval Activities Equipped With Infirmaries or Dispensaries

Subj: Clinical records for use by the U. S. Armed Forces Institute of Pathology; furnishing of, instructions concerning

This instruction prescribes the procedure to be observed when subject records are requested by the U. S. Armed Forces Institute of Pathology.

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BUMED INSTRUCTION 1510.1A

16 Sep 1953

From: Chief, Bureau of Medicine and Surgery
 To: Commandants, all Naval Districts (less 10, 15, and 17)
 Commandant, Potomac River Naval Command
 Chief, Naval Air Reserve Training Command
 Commanding Officers, all continental Naval Hospitals
 Commanding Officers, all Naval Reserve Training Centers

Subj: Inactive duty training program for Naval Reserve hospital corpsmen

Ref: (a) Outlines for Naval Reserve Curricula, Hospital Corps (NavPers 91949 May 1953 (formerly NavMed 1166))

This instruction provides information concerning the new training curricula for Naval Reserve hospital corpsmen attached to drilling units of the Naval Reserve and to direct the implementation of these curricula into the training program. BuMed Inst. 1510.1 of 2 Dec 1952 is cancelled.

BUMED INSTRUCTION 6510. 1A

17 Sep 1953

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Medical/Dental Personnel Regularly
Assigned

Subj: Armed Forces Institute of Pathology

Encl: (1) Department of Defense Directive No. 5136. 5 of 6 Aug 1953

This instruction, through enclosure (1), incorporates into the Navy Directives System the Department of Defense Directive No. 5136. 5. BuMed Inst. 6510. 1 is cancelled.

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BUMED INSTRUCTION 6010. 2A

18 Sep 1953

From: Chief, Bureau of Medicine and Surgery
To: All Naval Hospitals, and National Naval Medical Center,
Bethesda, Md.

Subj: Accounting for collection of monies for services at naval hospitals
and duties of collection agent

This instruction defines the duties of collection agents at naval hospitals and prescribes standard accounting policies and procedures in accounting for monies collected. BuMed Inst. 6010. 2 of 15 Apr 1953 is cancelled.

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BUMED INSTRUCTION 6010. 4

18 Sep 1953

From: Chief, Bureau of Medicine and Surgery
To: All Naval Hospitals, and National Naval Medical Center,
Bethesda, Md.

Subj: Reimbursement for in-patient and out-patient care furnished
beneficiaries of the Veterans Administration; procedure for
effecting

Ref: (a) Art. 21-22, ManMedDept
(b) BuMed Inst. 6010. 2A

This instruction establishes local billing and collection procedures in accordance with reference (b) for in-patient and out-patient care furnished eligible beneficiaries of the Veterans Administration.

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BUMED INSTRUCTION 5410.1

18 Sep 1953

From: Chief, Bureau of Medicine and Surgery
To: Ships and Stations Having Medical/Dental Personnel Regularly Assigned

Subj: Armed Forces Medical Publication Agency

Encl: (1) Army-Navy-Air Force joint directive concerning subject

This instruction, through enclosure (1) incorporates into the Navy Directives System a joint directive concerning the Armed Forces Medical Publication Agency.

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PREVENTIVE MEDICINE SECTION

Outbreaks of Food-Borne Illness and the Food-Sanitation Training Program

The Bureau of Medicine and Surgery has just completed a review of outbreaks of food-borne illnesses occurring in the Naval Establishment for the years 1950 through 1952. The total number of outbreaks reported for these 3 years was 243, involving 25,356 cases. Individuals admitted to the sick list numbered 3,866, the remainder being treated in an ambulatory status.

It is significant that 7 outbreaks of food-borne streptococcal sore throat were reported for this 3-year period, 1 in 1951 and 6 in 1952. Of

the 773 cases reported in this group, 708 were admitted to the sick list. In only 3 of the streptococcal outbreaks was the offending food listed; these were turkey salad, shrimp salad, and reconstituted powdered milk. Consideration should be given to the potential seriousness of these outbreaks. If the number of cases of rheumatic fever which can be expected to develop from such illness is estimated at approximately 3%, then these 700 cases of streptococcal sore throat could be expected to be followed by 21 cases of rheumatic fever. Each case of rheumatic fever causes considerable disability to the individual, often separation from the service, a pension, and consequent expense to the taxpayer.

Twenty-eight of the total number of outbreaks were diagnosed as dysentery; they included 4,026 cases, of which 1,621 were admitted to the sick list. Diagnosis of food poisoning or gastroenteritis was made in 157 outbreaks involving 16,197 cases. Of this group, 1,307 required admission to the sick list. There were 51 outbreaks of diarrhea; 250 of the 4,360 affected were admitted to the sick list.

The total number of outbreaks by years was as follows:

1950--- 68 outbreaks

1951--- 61 outbreaks

1952---114 outbreaks

The larger number of outbreaks for 1952 reflected increases in outbreaks reported by shore establishments and ships of the Military Sea Transportation Service.

Of the total number of outbreaks of food-borne illness, 116 were classed as lasting 1 day. In this group the vehicle was known in 99 instances. Water and milk were involved in only 3 outbreaks each. Foods other than milk were the vehicle in most of the cases. First on the list was pork, with ham accounting for 24 of 27 outbreaks; next came poultry, with turkey responsible for 12 of 18 outbreaks; other meats, not ground, followed, with beef causing 13 of 15 outbreaks; ground meat caused 11 outbreaks; commercially treated meats such as frankfurters and vienna sausage were vehicles in 5, meat loaf or stuffed pepper in 6; seafoods in 5, with lobster and shrimp accounting for 2 each. Desserts were responsible for 6 outbreaks; potato or macaroni salad for 5; and miscellaneous foods for 6.

Although there were more outbreaks in 1952 than in the 2 preceding years, the average size of the outbreaks was smaller, a larger portion of these being of 1 day's duration. This increase is believed to be due to improved reporting during this period.

The training of food-service personnel in Navy sanitary concepts is basic to any program designed to prevent or minimize outbreaks of food-borne diseases. To this end the Secretary of the Navy has recently issued SecNav Instruction 4063.1, Food Sanitation Training Program, dated 11 Aug 1953. This instruction cancels previous SecNav letter BuMed-7221, P11-1/J25, of 11 Jan 1950 (NOTAL). An initial course of instruction and subsequent semiannual refresher training are required for all food-service super-

visory personnel--officer, enlisted, and civilian--and for all persons employed for more than 30 days in food-service work in Navy and Marine Corps exchanges, open and closed officers' messes, and messes aboard MSTs vessels. The new SecNav instruction places definite responsibilities for this training program on fleet and shore-based commanding officers of Navy and Marine Corps activities and on MSTs area and subarea commanders, and requires that these commands issue or modify directives as necessary to comply with the SecNav instruction. The instruction further requires that facilities for food-sanitation training ashore shall be made available to and be used by forces afloat when practicable.

The instructional techniques to be used in the training program are covered by NavMed P-1333, Instructor's Guide--Sanitary Food Service. Sixteen of the pass-out sheets listed in the Instructor's Guide, to be used as visual aids by instructors, are now available from district publications and printing offices. Detailed technical information on the subject of sanitary food service will be found in NavPers 91921, Instruction in Sanitary Precautions for Food-Service Personnel. Both of these publications have been distributed or are in the process of being mailed to all ships and stations normally having a Medical Department representative on board. NavPers 91921 is intended to replace technical material contained in part III of NavMed P-1333, which was intended primarily for civilian use and which has not proved to be sufficiently applicable to the Navy nor to contain enough of the technical information that is needed for instructors in the Navy food-sanitation program. This publication, which was prepared by the Training Division of the Bureau of Naval Personnel, the Preventive Medicine Division of the Bureau of Medicine and Surgery, and the Bureau of Supplies and Accounts, contains 8 basic lesson plans, designed to be used in the minimum period of 8 hours of instruction recommended for the training program.

Progress is being made on the preparation of a series of flip charts using the subject matter of the lesson plans contained in NavPers 91921, and it is hoped that these charts may reach the field during calendar year 1954.

The Bureau of Ships has just completed 3 training films on dishwashing procedures. These are Navy numbers MN-7461-a, Hand Dishwashing and General Scullery practices; MN-7461-b, Machine Dishwashing; MN-7461-c, Machine Dishwashing, Double-Tank. These films are expected to be valuable aids to instructors in this field. Distribution is expected at an early date.

The Bureau of Medicine and Surgery is confident that if the food-sanitation training program is widely accepted and given full cooperation in all commands, particularly of all Medical Department personnel and of all commissary and civilian personnel in charge of food-service facilities, the number of food-borne diseases mentioned earlier in this article will be reduced and food service will be better and more economical. These accom-

ishments will not only decrease expenditures of money and medical and operating personnel, but will also improve the morale of the Navy in general.

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Manual of Naval Preventive Medicine

The Manual of Naval Hygiene and Sanitation, NavMed P-126 (Rev. 1949), is being revised and will be published under the title of Manual of Naval Preventive Medicine, NavMed P-5010. The new Manual will consist of approximately 16 chapters, each of which will be issued as completed. Though binders are being supplied in which to keep them, each of the chapters may be used as a separate pamphlet covering specific technical data under cognizance of the Bureau of Medicine and Surgery. The first to be completed is Chapter 10, Insecticides and Dispersal Methods, designated NavMed P-5010-10. This chapter is being distributed to all ships and stations having Medical Department personnel regularly assigned.

A covering letter from the Chief, Bureau of Medicine and Surgery, states: "All chapters will become effective upon receipt and the corresponding subject matter contained in the Manual of Naval Hygiene and Sanitation will be superseded. The 1949 edition of NavMed P-126 should be retained, and each individual chapter will remain in effect until it is superseded."

Training and Visual Aids

Notes on Environmental Sanitation Technician Course

Dr. J. C. Geiger, who is well known in the public health field, was the speaker on public health administration for recent orientation sessions at the Environmental Sanitation Technician Course, which is located at the U. S. Naval Hospital, Oakland, Calif.

Since the establishment of the 5-month course in 1950, 9 classes have graduated. An article by C. J. Jordan, ENS (MSC) USN, appearing in the September-October issue of the Medical Technicians Bulletin, is devoted to the course, the subjects taught, requirements for entrance, and opportunities upon graduation. Attention is called to this article in the hope that Medical Department personnel, who know the value and importance of this training, will refer it to enlisted personnel who may be eligible and interested.

* * * * *

Communicable Disease Control

Availability of Services of Preventive Medicine Personnel to Ships and Stations

The medical officer of a ship or station is responsible to the commanding officer for maintaining the health of the personnel of the command, making inspections incident thereto, and advising the commanding officer with respect to hygiene and sanitation affecting the command (par. 3-2, Manual of the Medical Department). The Manual of Naval Hygiene and Sanitation; current directives of the Bureau of Medicine and Surgery; various publications of the Bureau of Ships, Yards and Docks, and Supplies and Accounts; and textbooks of preventive medicine and public health are available to him for guidance and direction in carrying out his responsibilities in the field of preventive medicine.

However, unless the medical officer has had long naval service or special training in preventive medicine, he may find the interpretation and application of these published aids troublesome. Furthermore, the complexity, as well as the abundance, of specialized knowledge in this field is a formidable fact to face, especially when the aim is to prevent disability from occurring on a ship or station rather than to cope with it or attempt to control it after it occurs. The prevention of disability extends beyond the field of communicable disease into all preventable conditions affecting health.

Fortunately, there is a fairly wide distribution of Medical Department personnel throughout the Navy who are qualified to assist the medical officer in the detection of conditions that are potential causes of preventable disability and in the formulation of recommendations for their correction. The services of such personnel will ordinarily be made available by higher authority when requested by the commanding officer. In numerous instances in which such services have been utilized, the visits have been instructive, helpful, conducive to more efficient preventive operations and to the complete satisfaction of all concerned.

BuMed Instruction 6200.3 (12 Mar 1953) lists the U. S. Navy Preventive Medicine Units and sets forth the manner in which their services may be requested. Part of their mission is to supplement and assist the efforts of local personnel in their preventive medicine activities when requested.

Personnel of Fleet Epidemic Disease Control Unit No. 2 (U. S. S. Whidbey AG-141) are available upon request addressed to Commander, Naval Forces, Far East (COMNAVFE Instruction 5000.1)

The Preventive Medicine Officer, Headquarters, Fleet Support Activities, Naples, Italy, is available for preventive medicine advice and assistance upon request to that command via official channels.

The Preventive Medicine Officer, Third Marine Division, FMFPAC, and in fact the preventive medicine officer of any other Navy or Marine Corps activity may usually be made available upon request.

These personnel will assist in sanitary inspections, consult upon special problems, furnish information on technical matters, train laboratory personnel in special techniques, devise educational material for preventive medicine purposes, and provide indoctrinational lectures.

It is to be emphasized that preventive medicine personnel do not make self-initiated visits to ships and stations, that their services must be requested, and that they are equipped by training and motivation to be helpful rather than critical.

Industrial Medicine

Safety in the Care and Handling of Medical Gases

The fact that medical gas cylinders all have distinguishing colors as well as labels does not prevent the possibility of interchange when attaching the flush-type valves of gas cylinders to gas apparatus with yoke connections.

In a recent accident in a hospital operating room such an interchange occurred, with the substitution of a nitrous oxide cylinder for an oxygen cylinder, with fatal results. While distinguishing colors, labeling, and other safeguards are helpful, they do not guard against the human elements of carelessness, mental lapse, and preoccupation. To preclude such accidents in medical activities of the Navy, the Bureau of Medicine and Surgery is adopting the pin-index safety system, recommended by the Compressed Gas Association.

The pin-index safety system, which will be available in the near future, will prevent erroneous interchange of medical gas cylinders with flush-type valves. It is based on the matching of pins and holes. Two pins are installed in the yokes of the apparatus, and matching holes are drilled in the body of the cylinder valves. There is only one combination of pins and holes for any one gas. Unless the right cylinder valve is connected, the holes and pins will not match, and the two parts will not fit together.

In the interest of safety in hospital operating rooms, it is recommended that commands take steps to reinstruct their personnel in the importance of proper handling and identification of medical gases.

Insect and Rodent Control

AMA Report on Insecticide Vaporizers

Dispensing insecticides into the atmosphere of buildings and other enclosed spaces principally for the control of flying insects is being exploited in a variety of ways. Among the methods being critically examined for their health hazards are those concerned with heating, igniting, or otherwise evol-

ving vapors or fumes of chlorinated hydrocarbon insecticides. Two types of applications are currently employed: the slow, continuous dispersion of insecticide vapor in occupied areas other than homes and food-handling establishments, and, conversely, the rapid release of insecticidal fumes in temporarily unoccupied areas at intervals not to exceed every other week. Applicators utilized for these operations are now commonly referred to as insecticide vaporizing and fumigating devices, respectively.

Official acceptance of the methods embodied in these applications has undergone considerable modification in the last 2 years. Recommendations covering the chemicals used in these devices, their construction, and conditions under which continuous-type thermal generators for insecticides could be used were issued in September 1951 by the Interdepartmental Committee on Pest Control, a group representing Federal agencies interested in pest control.

A subsequent report by the Committee on Pesticides of the AMA gave substance to these recommendations by furnishing supporting laboratory data and cases of injury during servicing and operation of vaporizers in homes, offices, public eating places, and industrial establishments. The Committee pointed out that the vast majority of devices in use, because of poor construction and improper installation, violated accepted health practices. Attention was called to the urgency of this problem, and the Committee suggested that further steps be taken, at the state and local level, to curtail uncontrolled use. At least 14 states and 35 municipalities have since adopted measures controlling the installation, sale, or use of these devices. Other states and local groups have invoked existing provisions of their food laws and sanitary codes for similar purposes.

Laboratory studies have shown that various types of exposed surfaces differ considerably in their absorptive capacities to identical air concentrations of lindane that are well under the saturation level of the chemical in the atmosphere. Preferential absorption of lindane from the atmosphere has been observed by a variety of constitutionally dissimilar surfaces such as varnished wood, linoleum, plastic cheese wrappers, kraft paper, waxed paper, rubber sheeting, fatty and nonfatty foods, and water. The rate of disappearance of lindane from surfaces so contaminated is neither constant nor uniform.

The concentration of the insecticide and duration of exposure as well as the nature and extent of the surface exposed influence absorption. Preliminary laboratory studies have shown that 0.1 to 1 ppm or more per day will be absorbed by fruits, vegetables, cereals, dairy products, meat, bread, pastries, and other types of food exposed to vapors from a properly operating unit. Under similar conditions, water absorbs sufficient chemicals to be lethal to tropical fish. These findings, coupled with the observation that previous restrictions were not and cannot be practically enforced in other than industrial environments, prompted the current restrictions against use in food-handling establishments.

Opinion varies greatly as to the safety of vaporizing devices in human environment. Evidence in the majority of cases of injury suggests that defective equipment or other types of nonconformance with recommendations for use were primarily responsible; nevertheless, it is impossible to state that ill effects have not or will not result from properly operating devices used precisely in accordance with instructions.

Extensive use of these devices has demonstrated that human beings can acquire a sensitivity to lindane. In addition to cases cited in a previous Committee report, additional cases involving angioneurotic edema, skin sensitivity, and urticaria have been both privately reported and published. Because allergy is neither a unique nor a uniform clinical condition, it is likely that similar cases have occurred that have not been brought to the attention of the Committee.

The home use of volatilized chlorinated hydrocarbon insecticides as a "fumigating" application is being exploited as an alternate approach to the large and lucrative domestic market for inexpensive insecticide vapor and fume dispensers. Currently available fumigating applicators vary considerably in design and functional hazards. They include lindane-impregnated paper strips, recessed and perforated insecticide dispersing electric light bulbs, tins of pyrotechnic fumigant powder, and various types of vaporizing equipment for attachment to heating devices such as light bulbs or for direct insertion into electrical outlets.

The dangers inherent in the misuse of insecticide vaporizers employed as fumigators is of sufficient magnitude to warrant a third statement by the Interdepartmental Committee on Pest Control. In a release dated March 27, 1953, the Interdepartmental Committee recommended against their use in living quarters. The statement, which is directed not only to lindane-dispersing devices but also to any vaporizer using an insecticide as a fumigating agent, was precipitated by a growing trend to circumvent existing restrictions on the use of heat-volatilizing insecticide equipment in homes. Certain types of vaporizing devices, which do not conform to earlier recommendations for construction and installation, are being promoted as so-called fumigators for home use under circumstances that leave much to be desired.

Although existing restrictions have had a beneficial influence, it is generally recognized that they have only partially deterred many of the abuses associated with insecticide-dispersing appliances. Widespread misuse arising from improper installation and continued employment of unacceptable chemicals and equipment are still prevalent. These conditions are partially caused by the inability to enforce prohibitions against certain situations, such as home use, made prior to present regulatory bans and to the difficulty of policing use in other unacceptable environments which appear to many to be similar to those where vaporizers are legally allowed. However, the flamboyant and misleading advertising of certain of the more aggressive firms marketing these dispersers is mainly responsible for their

continued, widespread misapplication. (J. A. M. A., July 25, 1953, Council on Pharmacy and Chemistry)

(NOTE--SecNav Inst. 6250.2 and BuMed Inst. 6250.3 regulate the procurement and use of these devices and outline precautions required in the use of lindane and other insecticides.)

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Equine Encephalitis Epizootic in Cuba

At the request of the Commanding Officer, U.S. Naval Base, Guantanamo Bay, Preventive Medicine Unit No. 1 made a vector survey to insure the protection of naval personnel against spread of the outbreak of encephalitis among horses and some of the native population of Cuba. No cases have occurred among personnel of the Base.

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