



NAVY DEPARTMENT

BUMED NEWS LETTER

a digest of timely information

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Oxygen "Poisoning" at High Pressures: In man the period of time that pure oxygen can be safely breathed at sea level has not been determined. The dog, rabbit, rat, and other small animals develop pulmonary edema and hemorrhagic extravasation after 24 to 48 hours' exposure to the concentrated oxygen atmosphere. Contradictory reports of human oxygen tolerance arise, perhaps from the failure to consider that a healthy man may react differently than a sick one, and that interruption of oxygen inhalation for short periods of time or a decrease in the percentage breathed may minimize possible toxic symptoms. It should be emphasized that the administration of oxygen as clinically employed is usually well within the limits of tolerance. However, healthy men occasionally complain of irritability and irritation of the nasopharynx following prolonged (6 to 17 hours) uninterrupted inhalation of 99 per cent oxygen.

If an individual in a pressure chamber breathes oxygen instead of air a series of wholly different phenomena supervene. At a pressure of 3 atmospheres the oxygen absorbed in the lungs and transported in physical solution in blood is adequate to meet tissue requirements so that oxyhemoglobin is not reduced in its passage through capillaries. There is, accordingly, no reduced hemoglobin available for the transport of CO₂. Plasma CO₂ transport by solution and buffer methods is probably unchanged. How much of a role increased CO₂ in the tissues plays in the etiology of oxygen poisoning remains to be determined. Inhaled CO₂ is believed to render a given pressure of oxygen more toxic. This seemingly desirable condition of complete redbloodness is marred usually during the fourth hour of oxygen inhalation by a progressive contraction of the visual fields terminating in amblyopia. These alarming symptoms disappear when air is again breathed.

If now the ambient pressure is raised to 4 atmospheres or higher, oxygen inhalation is accompanied by convulsive seizures and at times an aura which, except for an increased intensity, simulate the convulsive states of idiopathic epilepsy. Recovery, again apparently complete, attends the substitution of air for oxygen. Perhaps no other agent is capable of bringing about the similar reversible responses characteristic of oxygen poisoning. (R.B.B.)

Drinking Fountains: A high proportion of drinking fountains now in use are insanitary and certain types of these fountains are potentially more dangerous than the outmoded common drinking cup. (Hitchens & Ross, J. Am. Water Works Ass'n., Feb. '43.)

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Sulfathiazole for Impetigo: Peterkin and Jones conclude that "Sulfathiazole seems to be the drug of choice in the local treatment of impetigo." Of 120 cases analyzed, 93 were cured in an average time of 6.8 days. Recommended are a 10% sulfathiazole in cream, a 5% sulfathiazole in cream or a 5% sulfathiazole in 15% starch and 15% zinc oxide paste. Results with sulfadiazine, sodium sulfathiazole and sulfamethazine were disappointing. (Brit. Med. J., Mar. 13, '43.)

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Passive Tetanus Immunity and Its Effect on Active Immunization: From tests on 9 children with clinical tetanus and 30 children aged 8 to 15 years in good health and under orthopedic treatment, Cooke and Jones conclude:

- (1) Passive immunization with 1500 units of tetanus antitoxin produced immunity for only about 3 weeks.
- (2) Passive immunization with 100,000 or more units resulted in the production of immunity for 8 to 11 weeks (assuming that a titer of 0.01 unit of passively introduced antitoxin is sufficient to guarantee immunity).
- (3) An attack of clinical tetanus did not produce antitoxic immunity upon recovery nor did it produce primary antigenic stimulation comparable to that produced by a first injection of toxoid.
- (4) When passive immunity was produced with 10,000 or more units of antitoxin the conversion of passive immunity to active by means of toxoid was only possible in 8 to 12 weeks irrespective of whether the toxoid injections were started at the time of the antitoxin injection or delayed, 2, 4 or even 6 weeks.
- (5) The presence of any considerable quantity of heterologous antitoxin appears to prevent the usual sensitization of the body cells by toxoid and renders it inert as an antigen. (J.A.M.A., Apr. 10, '43.)

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Our (U.S.N.) recommended procedure, when handling unimmunized patients, is to give tetanus antitoxin prophylaxis (1,500 units) and alum-precipitated tetanus toxoid simultaneously. Insoluble alum-precipitated toxoid is slowly liberated in soluble form, continuing the antigenic stimulation for a period well beyond the point where the diminishing curve of antitoxin in 2 to 3 weeks reaches zero. Thus we attempt to combine passive (antitoxin) with active (toxoid) immunization.

New Endemic Foci of Typhus in the United States: On the basis of case histories and examination of rats, Topping and Dyer suggest that Richmond, East Cleveland, St. Louis, and Washington, D. C., be regarded as endemic foci of murine typhus. (Am. J. Trop. Med., Jan. '43.)

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Immunologic Reactions in Sub-Clinical Trichinosis: Skin tests are apparently of little value in detecting old subclinical trichinosis. (Gould, Am. J. Hyg., Jan. '43.)

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Stain for Spirochetes: When running a dark-field examination on a patient the following described technic can be of real aid in the search and identification of spirochetes. The technic is simple and requires but very little time to perform. It is suggested that this procedure be carried out along with all routine dark-field examination. Spirochetes may be picked up that were overlooked or missed in the dark-field examination.

The patient is prepared in the usual manner for a dark-field examination. When the serum has been brought to the surface, impressions or smears are made on clean glass slides. The slides are allowed to set and begin to dry. At the point where the smear is just beginning to dry they are flooded with warm 10% formalin (37° C) or immersed for five minutes in methyl alcohol. Though the slides may remain in either solution for a longer period, experience indicates that exposure to warm 10% formalin for ten minutes is more satisfactory. This completes fixation. Technic for staining is described below.

Technic: (Formulae for solutions used in steps 1, 3 and 5, are given below.)

1. Flood the slides with acetic acid-formalin solution. Leave this solution on the fixed smear for five minutes.
2. Wash well in several changes of distilled water.
3. Flood the smear with tannic acid-phenol solution. Warm the slides until steam appears, then continue four minutes, keeping the solution just to this steaming point.
4. Wash in several changes of distilled water.
5. Flood the slide with ammoniacal silver solution and warm until steam appears. When the steam appears, continue heating for two minutes, keeping the solution just at this steaming point.
6. Wash well in several changes of distilled water.
7. Dehydrate quickly in pure acetone. Clear in xylol.
8. Mount in canada balsam.

Results: Spirochetes stain jet black on a brownish-yellow background. This stain is similar to the old Fontana stain.

Solutions:

1.5% Acetic Acid-Formalin

Glacial acetic acid	1.5 cc.
Formaldehyde (40%)	10.0 cc.
Distilled waterq.s.ad	100.0 cc.

Tannic Acid-Phenol

Phenol (c.p.) heated crystals	1.0 cc.
Tannic acid	4.5 cc.
Distilled waterq.s.ad	100.0 cc.

To each 100 cc. of this solution add 5 cc. of a 70% alcohol.

Ammoniacal Silver Solution

To 5% silver nitrate solution add drop by drop full strength ammonium hydroxide. A black precipitate forms. Keep adding ammonium hydroxide until this precipitate is dissolved on shaking. Agitate the solution as ammonia is added. To the completed solution add drop by drop, while shaking, 10% silver nitrate until the solution gets slightly cloudy or opalescent. This opalescence must persist on shaking. This solution, if kept from the light will keep for two to three months. If, however, the opalescence is not seen, add a few drops of 10% silver nitrate until it appears. (W.H.O.)

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A Pathologist's Abyssinian Notes: The author was in charge of a mobile laboratory which accompanied the advance through Italian Somaliland to Diredawa and Addis Ababa. During this period the laboratory dealt with specimens not only from British troops, both white and black, but also from the Ethiopians and Italian prisoners. This paper is a preliminary note on some of the conditions observed.

The author discusses typhus, malaria, dysentery, yellow fever, Kala Azar, venereal disease, relapsing fever and skin infections. Typhus, though frequent among the Ethiopians and Italians, was rare in British troops. Italians had been making vaccine by the laborious Weigl method. British mobile laboratory used the Goodpasture technic. A later report on results was promised. (Elsdon, S. Afr. Med. J., Dec. 12, '42.)

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White Phosphorus Burns Should be Treated Like Other Burns After Initial Application of Copper Sulfate: In the past, great difficulty has been experienced in treating white phosphorus burns, owing to the fact that phosphorus adheres to the flesh, where it continues to fume and occasionally burst into flame. When such burns are placed in a continuous bath, the phosphorus begins to fume and smolder again immediately on removal from the bath. The only method of treatment which was found practical was the use of agents which would place an insoluble, inert, nontoxic coating on any particles of phosphorus present, with subsequent removal of the particles. After experimentation, it was found that copper sulfate acted most rapidly. Whenever a phosphorus burn is received, a large sponge of absorbent cotton should be saturated with 1% copper sulfate solution and applied to the burning phosphorus. The copper-coated phosphorus should then be removed and the area treated thereafter like any other burn.

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Relation of the Size of Inoculation to the Development of Disease: "... the success or failure of inoculation is dependent upon the mass dose of *Spirochaeta pallida* present. With a small number of *Spirochaeta pallida*, inoculation fails, a larger number produces an asymptomatic infection, and a still larger number produces a typical chancre." (Ven. Dis. Inform., p. 113, Apr. '43.)

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Space Disinfection of Air - Possible Relation to Immunity: The principle that repeated exposure to subminimal infective doses is a common means of creating immunity is applicable to many diseases. This has long been believed in the case of respiratory virus diseases.

Whether the concentration of organisms in free suspension dispersed in the ambient atmosphere is ever of sufficient degree to bring about clinical infection, has been questioned. Consequently, before advocating space disinfection, should we not ask ourselves two pertinent questions:

1. Are we in fact preventing disease?
2. Are we not preventing the operation of a natural and potent means of gaining immunity without suffering injury?

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Present Status of the Intensive Arsenotherapy of Early Syphilis: Intensive methods of treatment must still be considered experimental. The potential hazard, at least of short intensive courses, makes it necessary to advise that they should not be attempted by physicians without extensive experience in the treatment of syphilis. Further information is being rapidly accumulated, and it is expected that such experience will permit the establishment of a definite procedure to be recommended in the near future for use in private practice and in the military services. Intensive therapy is

being tried in various types of latent and late syphilis, but its use in such cases is highly experimental and not as yet recommended. Its use should be restricted to previously untreated cases of early (primary and secondary) syphilis. (Shaffer, Ven. Dis. Inform., Apr. '43.)

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Explanation of Cases of Jaundice from Yellow Fever Vaccine in 1942: The vaccine now used by Army and Navy was developed in the laboratories of the International Health Division of the Rockefeller Foundation in 1936. During 1942 a great deal of attention was given by the Division, in association with medical personnel of the Services and experts from other institutions, to an outbreak of jaundice. These cases of jaundice appeared to be associated with certain lots of the yellow fever vaccine. In preceding years a total of nearly eight million vaccinations had been successfully administered without any disturbing consequence, except the recent appearance of a few cases of jaundice in Brazil. Research during 1942 indicated that the incidental jaundice, which is not contagious and does not constitute a danger to public health, is due to a virus contained in the human serum component employed in the vaccine. Oddly enough, cases of jaundice have appeared this year in England and Russia, apparently following the administration of vaccines or sera which were manufactured in those countries for prophylaxis of diseases other than yellow fever and which also contained a human serum component.

Yellow fever vaccine is now being successfully made without this component, and it is believed that the risk of jaundice has been definitely eliminated. In the meantime the International Health Division of the Foundation has adopted jaundice as a prime objective for research in the hope of clarifying the many hidden factors in this relatively obscure disease. The scope of the work will include a study of jaundice as it occurs in the general population as well as in groups which have received injections of serum-containing substances. (Rockefeller Foundation Review, 1942.)

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Sulfa-Resistance in an Organism Carried Through Clinical Transmission:

A case of type VIII pneumococcus pneumonia was reported in which the organism, originally sensitive to sulfadiazine, became resistant during the course of treatment. This same strain was then transmitted by contact to a second patient in an adjacent bed and later produced a pneumonia which also failed to respond to treatment with sulfadiazine. Drug-fastness was evidenced by the development of a positive blood culture during therapy in one patient, an extension of the pneumonia to other lobes in both patients, a marked increase in the number of pneumococci in the sputum in both patients, and the growth of these organisms in media containing 10 to 20 mg. per cent of sulfadiazine. On the other hand, the growth of these same cultures was inhibited by 5 to 10 mg. per cent of sulfathiazole.

After sulfadiazine-resistance had become apparent, serum and sulfathiazole were administered to both patients. Recovery followed. Evidence was obtained from the sputum that each of the latter agents exerted its characteristic

therapeutic effect. In addition, a follow-up study revealed that each patient continued to carry virulent sulfadiazine-resistant strains of type VIII pneumococci in his sputum for at least two months after hospitalization. (Ann. Int. Med., Mar. '43.)

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Current research indicates that one mechanism in the development of sulfa-resistance in organisms is development of the ability of intracellular synthesis of para-amino-benzoic acid (P-A-B). It will be remembered that for bacteria P-A-B is ordinarily an exogenous essential growth substance, which might then be termed a vitamin for bacteria. The sulfa drugs probably act by replacing P-A-B, thus depriving the organism of a substance essential to its enzyme system. Organisms are then inhibited in their growth and multiplication (bacteriostasis) and later overwhelmed by natural defense mechanisms such as antibodies and leukocytes.

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Treatment of Syphilis with Phenarsine Hydrochloride: A new trivalent arsenical preparation, 3 - amino - 4 - hydroxyphenyldichlorarsine hydrochloride, has been subjected to a clinical test in the treatment of 96 patients with syphilis in the Massachusetts Memorial Hospital clinics. A total of 2,033 injections have been given over a period of 20 months.

The drug was given in courses of 12 weekly injections, each course being alternated with one of 10 to 12 weekly injections of bismuth subsalicylate in oil. The initial dose for both men and women was 45 mg.; subsequent doses were 67 mg.

In the group of patients with manifestations of late syphilis, tolerance was good, symptomatic improvement was noted, and the results were entirely satisfactory. Toxic reactions were few, chiefly in the form of mild gastrointestinal disturbances. None of the more severe forms of toxic reaction were noted.

The author believes that these results indicate that phenarsine hydrochloride is a potent antisyphilitic drug of low toxicity. Its properties are such as to justify its general use in extended studies carried out in larger groups of patients and over long periods of time. (Long, Arch. Dermat. & Syph., Feb. '43.)

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Biologic False Positive Tests for Syphilis Associated with Routine Army Immunizations: It is well established that biologic false positive reactions for syphilis occur in malaria, leprosy, and infectious mononucleosis. In other diseases and following injections of horse serum and other immunizations, occasional false positive reactions are obtained. The authors have made a study of false serologic reactions following immunizations carried out in the Army.

The conclusions from this study are that the routine Army immunizations against smallpox, typhoid, tetanus, and yellow fever, so grouped because it was impossible to study the reaction after individual inoculations, may be responsible in 14.8 per cent of cases for temporary biologic false positive reactions for syphilis, which may persist for as long as one to two months. (Arthur and Hale, Mil. Surgeon, Jan. '43.)

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Effect of Pre-Oxygenation on Decompression Illness: Certain symptoms which appear in susceptible individuals at altitudes of 30,000 feet or above are variously called bends, aero-embolism, aero-empysema and decompression sickness. These symptoms in order of frequency of occurrence are pains in or about the joints, paresthesias and a syndrome called the chokes, consisting of substernal distress especially during deep inspiration. It is generally believed that these symptoms are due to the liberation of gaseous nitrogen from solution in the blood stream and tissues.

Investigations recently conducted at the U.S. Naval Air Training Center, Pensacola, Florida, and at the Experimental Diving Unit, Navy Yard, Washington, D. C., have demonstrated the value of pre-oxygenation for the purpose of removing the atmospheric nitrogen dissolved in the body tissues.

Thus one to two hours of oxygen inhalation prior to flight or at altitude levels below 20,000 feet appear to protect the majority of individuals who otherwise would be forced to descend because of bends or chokes.

In field practice, any period of oxygen inhalation of thirty or more minutes prior to reaching altitudes above 25,000 feet should be beneficial. Especially effective and probably feasible would be a method of oxygen inhalation, "walkabout", permitting the individual to carry out his usual assignments.

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Anastomosis of Artery by Vein Transplant, Non-Suture Method: Ray, Balkemore and Lord, in a study designed to compare the non-suture method of bridging a gap in the femoral artery with the Carrel suture technic, observed 20 dogs. In half this number the severed arteries were replaced by the suture method; in the remaining 10 continuity was established by a non-suture vein graft or transplant. It was found that the non-suture method functioned in a greater percentage of cases in the presence of bacterial contamination than the Carrel suture technic.

A series of seven pairs of animals were operated upon in which a segment of the femoral vein from animal A was transplanted to a gap in the right femoral artery of animal B. The procedure was carried out aseptically. Daily examination of the anastomosis by palpation was carried out. The average duration of patent anastomosis was 17 days. The greatest length of time that any one anastomosis was patent was 22 days.

A group of 6 dogs were subjected to aseptic amputation of the right hind leg through the mid-thigh. The investigators believe their results demonstrate that the two-tube non-suture technic of bridging a gap in the artery transports sufficient blood to maintain the viability of the limb. Also, that donor vein grafts from another animal of the same species function for a sufficient length of time to permit collateral circulation to develop. (Current Research, OMECNR, Feb., '43.)

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Public Health Foreign Reports:

PLAGUE

Peru: During the month of January 1943, plague was reported in Peru, as follows: Libertad Department - Trujillo, 4 cases; Moche, 1 case; rural, 1 case; Lima Department - Lima, 1 case, 1 death, and rodent plague.

SMALLPOX

Algeria: For the period February 11-20, 1943, 49 cases of smallpox were reported in Algeria, including 2 cases in Oran and 2 cases in Philippeville.

Indochina: For the period January 1 to February 20, 1943, 313 cases of smallpox were reported in Cochinchina and 405 cases in Tonkin, Indochina.

TYPHUS FEVER

Algeria: For the period February 11-20, 1943, 363 cases of typhus fever were reported in Algeria, including cases reported in certain ports as follows: Algiers, 9; Bone, 6; Philippeville, 19; Oran, 64; Mostaganem, 1.

Germany: During the first 7 weeks of 1943, 800 cases of typhus fever were reported in Germany.

Hungary: For the week ended March 6, 1943, 8 cases of typhus fever were reported in Hungary.

Rumania: For the period March 1-7, 1943, 593 cases of typhus fever, including 31 cases in Bucharest, were reported in Rumania.

Slovakia: For the week ended February 20, 1943, 8 cases of typhus fever were reported in Slovakia.

Spain: For the 2 weeks ended February 6, 1943, 21 cases of typhus fever, including 10 cases in Barcelona, were reported in Spain.

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Chlorides in Heart's Blood Clue to Death by Drowning: In both dogs and man a progressive loss of plasma chlorides accompanied by an increase in plasma magnesium represents a normal postmortem phenomenon.

These changes do not always occur at the same rate in the two sides of the heart. In dogs, differences in chlorides as great as 40 mg. and in magnesium as great as 0.9 mg. per hundred cubic centimeters of plasma may be encountered within 24 hours after death. Comparable differences have been observed in man.

After drowning in fresh water not only may the plasma chlorides be reduced in both sides of the heart to levels not ordinarily encountered in comparable samples from control subjects but the reduction may be significantly greater in the left than in the right side.

After drowning in sea water the chlorides and the magnesium are increased in both sides of the heart to levels not ordinarily encountered in control subjects. The increases are likely to be significantly greater in the left than in the right side.

The agonal and early postmortem differences between the chemical constitution of the blood on the left and that of the blood on the right side of the heart, which may exist after drowning in either fresh or sea water, tend to disappear as putrefaction progresses. (Jetter and Moritz, Arch. Path., Apr. '43,)

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War Decreases Civilian Psychoneurotic Casualties in Britain: Despite the expectation of a large number of civilian psychiatric casualties, reports to date indicate that only a small percentage of true traumatic neuroses have developed in combat areas. Survey of the situation in England shows that the immediate personal factors still predominate etiologically in the production of psychoneuroses. Similar to the observations made during the Spanish Revolution, external threat has the effect of unifying a group subjected to attack.

The cost of insecurities arising from threats other than that of bombing is yet to be evaluated. Adjustments and dislocations necessitated by the impact of an all out war may be anticipated as potent forces.

Recognizing the ramifications of psychiatry in our civilization, the Rockefeller Foundation has appropriated \$11,500,000 over the past decade in support of what it terms "...perhaps the most significant field in which modern medicine is engaged." (H.P.R.) - (Rockefeller Foundation Review, 1942.)

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The Military Surgical Manuals now in print are as follows: "Plastic and Maxillofacial Surgery", "Ophthalmology and Otolaryngology", "Abdominal and Genito-Urinary Injuries", "Orthopedic Subjects", "Burns, Shock, Wound Healing and Vascular Injuries", and "Neurosurgery and Thoracic Surgery."

To this list is being added a number of Military Medical Manuals. The two which have already been published in the latter series are "Manual of Dermatology" and "Manual of Industrial Hygiene." These manuals are presentations which should prove of real aid to the medical officer handling the phases of work covered by the above titles. They have been prepared under the auspices of the National Research Council and are published by the W. B. Saunders Company, Philadelphia and London. They may be obtained through the regular channels; price \$2.00.

The foreword by the Surgeon General in each of the Surgical Manuals listed above is quoted:

"The naval medical officer is often faced with medical or surgical situations with which he must deal entirely alone and without the opportunity for consultation and assistance from other members of his profession. He may be the only medical man on a ship in the middle of an ocean, and any surgical emergency must be met by him and him alone. He cannot refer the case to a specialist; he himself must do everything that is necessary. It is important that he have the best assistance that professional books and journals can give him. A volume such as this, which contains practical and essential things, readily accessible, is a real help to a medical officer and patient in this situation."

The foreword in the volume on dermatology is as follows: "The need for a manual on military dermatology has been considered an urgent one by the Bureau of Medicine and Surgery. Now, with war actually under way, and the expansion of personnel going on at a tremendous rate, the need is doubly acute.

"As in other specialties, the Division of Medical Sciences of the National Research Council has come to our aid in bringing about the preparation of a condensed manual. Commander Marion B. Sulzberger, Medical Corps, U.S. Navy, Donald M. Pillsbury, Consultant in Dermatology to the Committee on Medicine, and Major Clarence S. Livingood, Medical Corps, U.S. Army, collaborated in the preparation of this manual on military dermatology. It will be of decided value to all the medical officers in the U.S. Navy, for it is complete in every way and covers not only diseases we expect to find in the United States, but also those that will confront us in the tropics.

"The Medical Department of the Navy appreciates very much the careful work that has been done in the preparation of this concise volume."
Ross T. McIntire.

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Mailing Tube Requests: The Naval Medical School has received several requests for mailing tubes. The School does not supply mailing tubes for specimens or other purposes.

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Fish Facts Every Medical Officer Should Know:

1. Edible Fish: Most fish are edible, palatable and wholesome. Even if their flesh is hard, meager, too soft and slimy or in some way unappetizing, it is still safe to eat most kinds of fish. But there are also fish with flesh that is definitely and positively poisonous, and it is important that everyone sojourning in tropical Indo-Pacific waters should know about them.

In many places, the native inhabitants claim that certain fish, usually considered wholesome and agreeable, are also poisonous. These borderline fish are certain sardines, herring, red snapper, giant barracuda, and a few kinds of small fish of no importance. The probability is that any case of poisoning due to eating fish of the kinds just named is really a case of food infection or food poisoning. These cases may occasionally masquerade under the old misnomer - ptomaine poisoning - though it was shown a generation ago that broken down protein per se was not of itself toxic. In medicine, the terms ptomaine and leukomaine have long since been dropped, but they still live on, principally in newspaper vocabulary.

2. Cleaning of Fish: When fish are caught in regions where the temperature never drops below 70°, where the water is always about 80°, and where the air is always humid, they cannot be handled in the same way as in regions where the water is always cold and the air temperature is highly variable. Fish spoil easily in all regions, but in the tropics one has to work at the job if he wants them to remain palatable and wholesome.

Most groupers, and some other fish, are very easily kept alive, but the majority of edible tropical marine fish die quickly after being taken from the water. Immediately after landing a fish it should be bled by cutting the blood vessels in the throat that supply the gills. If possible, it should also be gutted, being careful to remove the kidneys and great blood vessels next the backbone; they lie behind a membrane that separates them from the body cavity where the intestines lie. The fish should then be washed inside and out with fresh clean water, salt or fresh. If it is not to be cooked and eaten at once, it should be iced or put into cold storage as soon as possible. Fish that are bled at once and hung up by the tail will be in good condition long after those not bled have become stale, while those bled and gutted will still be good when those not so treated are already tainted. Gutting fish is especially valuable when they have been caught while feeding heavily and are stuffed with food. In such cases the digestive enzymes attack the walls of the stomach and destroy them with great rapidity. Not stopping there, the flesh is also attacked and softened. Between this action and the putrefaction of the undigested food mass, which both proceed with great rapidity, the fish is unfit for use in a short time. But the same fish bled, gutted, washed, and hung up by the tail in the shade and breeze would remain perfectly good for many hours.

3. How to tell stale fish: All fish markets should be supervised with great care, and all fish not strictly fresh should be destroyed or used as fertilizer. Never eat a fish, even if you caught it yourself, that has pale slimy gills, sunken eyes, flabby skin and flesh, an unpleasant odor, or one

in the least suggestive of putridity, or whose flesh remains pitted when indented by the thumb. Good fish should have pink to red gills, free from stringy slime, bright clear eyes, and firm flesh that does not remain pitted. Marine fish should also have a salt-water tang or clean fishy odor.

4. Fish with poisonous flesh: After making due allowance for all the above, there remain certain fish whose flesh, no matter how fresh, is always suspect; these vary from those that may be more or less dangerous, to those that are violently poisonous. The last may cause death or long and painful illness.

All the important fish with poisonous flesh belong to the order of the Plectognathi, a large group well developed in the tropics. The fish of this order usually have the body covered with rough or spiny scales, or with thorn-like spines, or with bony plates. In one the skin is naked, or is more or less strewn with soft spines or bristles, which in some cases may look like hair. None have ordinary scales such as we see on bass or trout, or snappers and groupers, or goldfish. A safe rule is: If it doesn't look like an ordinary fish, if it is marked in a bizarre fashion, if it has appendages of unusual type, if its mouth is unusual in appearance or lacks teeth, if it is not covered with the ordinary variety of fish scales, let it alone.

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The above material is based upon a report by W.C.T. Herre, Curator of Ichthyology, Stanford University; Former Chief, Division of Fisheries, Bureau of Science, Manila.

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The discussion which follows represents an effort to give to the readers of the Bumed News Letter in somewhat condensed form an article from "Endeavour" by L.P. Garrod entitled "Progress in Bacterial Chemotherapy." Although condensed, the language is as far as possible that of the author.

Chemotherapy of bacterial infection is one of the important advances in the science of medicine. We are still in the midst of changes begun by the introduction of sulfanilamide.

Some thoughts on how this dramatic change in medical practice came about, with a glimpse into the future given in Garrod's article may be of value.

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Progress in Bacterial Chemotherapy: In countering the attack of microbic infection, a remedy which will destroy the micro-organism itself will clearly be the most certain in its action. If a drug capable of doing this can reach the affected area in the circulating blood, thus pervading it completely, the therapeutic ideal has been attained. It need scarcely be said that most "Antiseptics" are wholly unsuited for such a purpose; they are far more lethal

to man himself than to the micro-organisms which attack him. It is broadly true that the more complex an organism, the more readily is it poisoned, and a substance relatively harmless to the human body but nevertheless lethal to a unicellular micro-organism must have exceptional properties and will not be easy to find.

Until recent times a sharp distinction has been drawn in this connection between protozoa and bacteria. The former belong to the animal kingdom, are somewhat more complex in structure and metabolism, and were believed on these grounds to be more susceptible to attack. The efficacy of quinine in malaria and of ipecacuanha in amoebic dysentery has long been practical evidence for this belief. Bacteria, on the other hand, are the most primitive members of the vegetable kingdom. No drug was known which would seriously interfere with their activities within the body, and many microbiologists doubted whether such a substance could exist.

Prior to 1935 medical science stood almost powerless before cases loosely categorized as "blood-poisoning"; they are now as amenable to treatment as they were formerly resistant. The origin of these and other developments of bacterial chemotherapy was the synthesis by Mietzsch and Klarer of the drug known as prontosil, and the disclosure of its therapeutic properties by Domagk. Whereas this original discovery was made in German laboratories, the immense developments which have proceeded from it are due in the first place to an observation made in France, and subsequently in the main to work in Great Britain and the United States.

It was soon established that prontosil owed its therapeutic activity to a constituent known as sulfanilamide, and the latter, which had advantages in greater solubility and more rapid absorption, came into therapeutic use in place of prontosil.

This further discovery has led to the synthesis of innumerable further compounds based on the sulfanilamide molecule, in the hope of obtaining improved effect or of extending the effective scope of this treatment to other diseases. The introduction in 1938 of sulfapyridine for the treatment of pneumonia filled the most serious gap in the capacity of these drugs to arrest acute and frequently fatal bacterial infections. Sulfadiazine, another compound, is in increasing demand not merely for its efficacy, but because it can be taken in large doses without causing the nausea and depression produced by others. This and other advantages are claimed for sulfamethazine, a new British product.

Of wider interest than the conquest of any particular infection has been the problem of how these compounds act. They do not behave like ordinary antiseptics, killing bacteria in the test-tube within a few minutes. Prontosil has in fact no action whatever on bacteria outside the body, and that of sulfanilamide is unimpressive when tested by ordinary methods, consisting only of a capacity for preventing the growth of small numbers of bacteria rather than the ability to destroy many outright. It was therefore natural that some mode

of action in the body should have been suspected other than one directly lethal to bacteria; the complexity of the processes both of microbic attack and of bodily defense is such that there are many points at which interference might occur. The Germans under Domagk attribute this action to some secret progress of events in an area of infection in the living body subject to chemotherapy. The more widely held theory is that sulfonamide compounds have no occult or indirect action but check bacterial growth in the body by some interference with the processes necessary for their multiplication. This in itself is enough to secure their destruction, both because bacteria kept at the temperature of the body must either grow or die, and because acute infections progress only by very rapid bacterial multiplication; if this should cease, the growing strength of the forces of defense will inevitably prevail.

Moreover, we can understand precisely how sulfonamide compounds interfere with bacterial growth. For everyday purposes it is enough that most bacteria will grow in a medium composed of meat extract and peptone, the only object being that they should grow. But it would clearly be of great advantage to the fundamental understanding of bacterial activity to know in exact chemical terms what nutritive elements are necessary for their growth. These can only be identified by using media consisting of pure, and preferably synthetic, ingredients, starting in any given case with the simplest possible constitution and making additions until growth is secured. By this method P. Fildes and his collaborators at the laboratory in the Middlesex Hospital have amassed extensive and valuable data, and identified various previously unknown "factors" necessary for the growth of different bacterial species. Having in the course of this work exactly ascertained the growth requirements of streptococci, they were in a unique position to study any effect on the growth of this micro-organism produced by sulfanilamide.

J. S. Lockwood of Philadelphia first observed that the restraint of bacterial growth by sulfanilamide "in vitro" is prevented by peptone; this is a constituent of all ordinary culture media, and its presence thus accounts for the unimpressive results of earlier tests. Stamp and Green showed that a substance can be extracted from streptococci themselves, and from other bacteria, which antagonizes the action of sulfanilamide. D. D. Woods then found that this substance existed in yeast, and since this was a prolific source he was able to fractionate it and test each fraction for its capacity to antagonize the action of sulfanilamide on streptococci in a synthetic medium. By this laborious process he succeeded in identifying the substance concerned as p-aminobenzoic acid. Whether obtained from yeast or independently synthesized, it quantitatively neutralizes the action of sulfanilamide on bacteria "in vitro"; it also completely prevents curative action in the infected animal body.

The profound significance of this discovery needs no emphasis. By laying bare the exact mechanism underlying the greatest therapeutic discovery of modern times it has opened the way to its extension on rational instead of merely empirical lines. It has had a more immediate and practical effect in encouraging and justifying the local application of these drugs in powder form to wounds, a measure which has proved of immense value, particularly in war surgery.

No review of progress in this sphere would be complete without reference to the astonishing observations recently made on the extraction of antiseptic substances from micro-organisms themselves. Whether by chance or as part of the antagonism between species which occurs so often throughout both animal and vegetable kingdoms, certain micro-organisms do produce substances highly inimical to others. Penicillin is a powerful antiseptic, and nothing stands in the way of what bids fair to be a valuable use for it in medicine except difficulty of production on an adequate scale. Gramicidin is the name given to a substance extracted from an otherwise quite indifferent bacillus isolated from soil; it has properties similar to those of penicillin, and has been reported within the past few months to satisfy a special need in the treatment of wound infection. Here again there are prospects that chemical analysis of the underlying process may place a new form of treatment on a more assured footing. In this field of medical research, in Britain at least, war has been the incentive to rapid progress. More has been achieved towards the control of infection, particularly of wounds, than might have followed many years of more leisurely study with less motive and material.

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Scarlet Fever, Continued Increased Incidence in the Northern United States is Indicated: On the basis of figures received from the Naval Districts in the continental United States, a continued increased incidence of scarlet fever in the near future can be predicted. It is interesting to note that the District Epidemiological Unit in the Fifth Naval District found an increasing rate of positives (group A "Beta-Hemolytic Streptococcus") among contact surveys made there. In the month of March, seven contact groups were studied, percentages of positives ranging from 0 (2 groups) to 12.3. With this rate in a highly "seeded" population, a sharp increase in the prevalence of scarlet fever, septic sore throat, and streptococcal infections in general is predicted. (V.C.T.)

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Sore and Bleeding Gums in Naval Personnel. Vitamin C and Nicotinic Acid Intakes: In 51 Naval (British) patients with sore and bleeding gums, often labeled scorbutic, the average daily intake of ascorbic acid estimated from dietaries ranged from 16 to 80 mg. (average 37 mg.). They were "unsaturated," but no more so than healthy controls. Clinical evidence of scurvy or "subscurvy" was absent. Local causes - infections, calculus, etc. were sufficient to account for the gum condition, and ascorbic acid was therapeutically ineffective. In this series vitamin C deficiency was not a prime cause of sore and bleeding gums.

About 85% of the cases had Vincent's stomatitis.

No relation to nicotinic acid deficiency could be demonstrated. (Ungley and Horton, Lancet, Mar. 27, '43.)

Deep Infections of the Neck of Dental Origin: The oral cavity, with its ever-present infective conditions, and by the nature of its bony architecture, is a common site for conditions which terminate in deep abscesses of the neck. This is particularly true when the soft tissues of the mouth are broken by trauma, incision or other pathological lesion, at a time when ordinary mouth hygiene is neglected.

The shape and architecture of the mandible are such that the retromolar area, with its covering of lymph tissue, is commonly subjected to severe surgical damage during the removal of an embedded or impacted third molar. Therefore, extraction of a tooth, particularly an impacted tooth, should be attended by surgical cleanliness, followed by post-surgical care and observation until repair and healing of the wound have taken place.

Deep abscesses of dental origin may arise in three ways: By direct extension; from extensively lacerated wounds; and through the blood stream in the form of infected emboli.

The conditions that lead to a breakdown of normal tissue resistance are:

1. Lowered body resistance attributable to chronic diseases such as tuberculosis, leukemia, avitaminosis, or diabetes.
2. Poor mouth hygiene resulting from lack of oral cleanliness, faulty interdental contact, poorly fitted bridges, faulty prostheses or poor fillings and salivary and serumal deposits.
3. Diseased conditions of the teeth and investing structures which may result from dental caries, gingivitis, paradentosis, impaction and abscess of the teeth.
4. Common pathogenic organisms of the mouth.
5. Surgical trauma.

The usual symptoms are: Pain, tenderness, massive edema, trismus, chills, elevated temperature, dehydration and toxemia.

Treatment is primarily medical including bed rest and supportive treatment with control of pain. Sedation is important. Sulfonamide therapy is one of our best weapons. Of the sulfa drugs, sulfathiazole is now preferred in dental surgery. X-ray therapy on a carefully metered basis is often helpful. Surgical incision and drainage are resorted to only if and when pointing and localization occur. (Tichy, J. Oral Surg., Jan. '43.)

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Sterilization of the Sulfonamides for Local Use is Necessary: Sulfonamides do not sterilize themselves. Spores have been grown from drugs not properly sterilized. Tetanus has been reported in the literature traced to the sulfonamide container. Only sterile powders should be used in open wounds. Sterilize by dry heat at 120° C for 20 minutes or by autoclaving at 15 lbs. pressure for 20 minutes. (Lindsey, South Surg., '42.)

Effect of Benzedrine on Fire Power - Preliminary Report of a Controlled Field Study: Observations on the effects of benzedrine sulfate on fatigue and small-arms fire-power have been conducted by personnel from the Bureau of Medicine and Surgery and the National Naval Medical Center in cooperation with the United States Marine Corps. Volunteers from the 23rd Marines were acutely fatigued over a period of 60 hours, and their performance at the target compared with their demonstrated ability before and after the fatigue period. Subjective impressions were reported daily by all subjects. Each man was also interviewed daily by a medical officer.

Preliminary analysis of the data indicates that fatigue decreased neither the accuracy of fire nor the number of hits per minute (fire-power). In fact, fatigue itself appeared slightly to improve the scores of all subjects. However, a statistically significant improvement in fire-power was apparent in the men to whom benzedrine was administered (10 mg. every 6 hours) when their performance was compared with that of controls.

Examination of the subjective data derived from reports made by the men themselves, appears to show that benzedrine does not alleviate the symptoms of fatigue as compared with placebo administration, although it was definitely of value in combating the desire for sleep, and it did increase the confidence of the subjects in their shooting ability.

At the end of the experimental period weight losses in the benzedrine group were found to be approximately twice as great as those seen in control subjects. Other than in this tendency to lose weight, the use of benzedrine (in the dosage employed) was not found to be deleterious.

To summarize, fatigue alone appears slightly to improve performance. The administration of benzedrine improved fire-power (accuracy and hits per minute). Benzedrine does not alleviate symptoms of fatigue except to combat desire for sleep and to increase confidence. Weight loss in benzedrine-treated men averaged twice that of men similarly fatigued without benzedrine. (E.L.C.)

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Service of Medical Information: Inquiries have been received indicating that it may be well to repeat some points touched upon in the announcement paragraph published in the first Bumed News Letter.

All abstracts of published articles give the author and publication with a brief date line. The News Letter, for brevity, eliminates long reference data. Material which does not bear a reference represents either informal editorial comment, Bureau Division announcement or comment, or material originating in current research. Where possible or necessary these sources may be indicated. It may be noted that some of the material previously published as the Microfilm Letter is now incorporated in the Bumed News Letter.

Again it is desired to emphasize the request for contributions of news-worthy professional items from officers of the Medical Department. These items may be abstracts of articles which the officer considers important and would like to have made available to all other officers, or they may be his own personal comments, experiences or observations. Such contributions should be sent with the feeling that they will be read and considered for publication in the News Letter. That they may not appear in print should not be considered as a reflection on the worth of the item. Material for the Bumed News Letter must be considered in relation to previous coverage of the subject or planned presentations; also, as to its timeliness, medical import and general interest to a personnel scattered in all quarters of the globe.

Medical officers should bear in mind that observations which to them are routine may be interesting or important and entirely foreign to the experience of many others.

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Protargol in the Prophylaxis of Gonorrhoea: "No information exists as to the strength of protargol solution effective in the prophylaxis of gonorrhoea. However, there is available information that in the treatment of established gonococcal urethritis in the male, 0.5% protargol solution appears to be as effective as the 2% solution. There is therefore no known contraindication to reduction of the strength of protargol solution used in prophylaxis from 2% to 0.5%." (N.R.C. Subcom. on Ven. Dis.)

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Biopsy of Malignancy Should Accompany the Patient: The Bureau is informed that the provisions of #2178, Manual of the Medical Department, U.S.N., are often not complied with. This paragraph directs that transfer of pathological tissue and/or slide be accomplished with each patient in which the diagnosis of malignancy has been established. It is most urgent that this be accomplished in every case.

The following comment made by an officer (F.K.S.) who has seen cases arrive at one of our X-ray and radium malignant therapy centers without biopsy tissue or slide makes clear the unnecessary injury done a patient when biopsy is repeated.

In case a biopsy has been made the specimen of the tissue and specimens mounted on slide for microscopic examination should be sent. Reasons: (1) No treatment for malignancy is instituted on basis of hearsay or indefinite evidence in any scientific institution; (2) the microscopic architecture of a lesion indicates its radiosensitivity or resistance. Descriptions of lesions in words are inadequate. Scientific treatment is impossible without direct examination of microscopic structure of the lesion by the person responsible for outlining radium, X-ray, or surgical treatment, determining doses and relative efficacy of different methods of treatment. When patients are received without specimens, biopsy must be repeated to save time in correspondence - this at additional risk of precipitating metastasis through lymphatics and bloodstream. One biopsy should suffice.

Peripheral Nerve Injuries Following Intramuscular Injections: Woodson* adds three cases to the growing list of neurological complications following the intramuscular injection of medication. All three of his patients developed severe sciatic palsies shortly after the intragluteal injection of fairly large amounts of paraldehyde. In each instance, there was residual damage at the time of discharge from the hospital.

Irritants, such as antipyrine, sodium sulfapyridine, quinine, alcohol, bismuth and ether, have been previously shown to produce similar syndromes when injected into or near nerve trunks.

Almost all medicaments which can be given intramuscularly are capable of producing nerve injury if not administered with caution. The nerves innervating the upper and lower extremities are most liable to this type of injury, since the site of intramuscular injections is most frequently the buttocks or the deltoid regions. Simple precautions based on a knowledge of the nerve pathways in these areas are sufficient to preclude this unnecessary complication.

The upper outer quadrant of the buttock contains no vulnerable structures. This area is bounded medially by an imaginary line drawn between the posterior superior spine of the ilium and the tuberosity of the ischium. Its inferior border is formed by a horizontal line drawn through the tuberosity of the ischium.

The deltoid region should never be used when deep intramuscular injections are indicated or when the quantity is more than a few cubic centimeters. The axillary nerve, as it winds around the head of the humerus, and the radial nerve in the upper third of the arm are the ones most liable to damage in this area. A point on the lateral surface of the deltoid region mid-way between the shoulder tip above and the insertion of the muscle below is the site of election on the upper extremity. Large doses of medication to be administered by this route should be divided and given in different areas to avoid this contingency, as well as to minimize local inflammation, pain from pressure and to facilitate absorption. (W.F.K.) *J.A.M.A., Apr. 24, '43.)

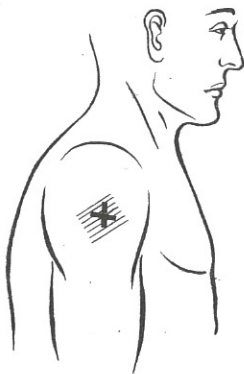


Fig. 1. Shaded area indicates site of election on upper extremity.

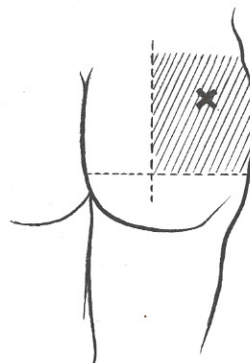


Fig. 2. Shaded area indicates upper outer quadrant. "X" marks point of preference.

Aqueous-Base Yellow Fever Vaccine: "The preparation of aqueous-base living yellow fever vaccine was undertaken by the United States Public Health Service in 1941. This vaccine is an aqueous extract of 10 to 11-day-old chick embryos infected with the attenuated 17 D serum-base vaccine extensively used in recent years. It contains 75 per cent, rather than 10 to 40 per cent, embryo extract and no serum diluent. The extract is preserved by desiccation under high vacuum from the frozen state, with storage at sub-freezing temperatures in an atmosphere of dry nitrogen. For administration the dried preparation is rehydrated and diluted 1:10 with physiological saline, with each recipient receiving 0.5 mg. subcutaneously.

The increased virus content of the aqueous product as contrasted with the serum-containing preparation insures that a greater quantity of virus is inoculated per individual vaccinated. This favors immunization.

In excess of 600,000 doses of the aqueous type vaccine have been released to date for general use without encountering unfavorable reactions.

Dangers of vaccine contamination by serum containing pathogenic agents is eliminated." (Hargett, Burruss, Donovan, Pub. Health Rep., in press.)

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Need for Plasma or Albumin Early in Prophylaxis of Shock is Emphasized: Newhouser and Lozner again emphasize the necessity of administering an adequate amount of blood derivative following trauma or burns, preferably before the onset of symptoms of shock. Five hundred to 1000 cc. of plasma or 25 to 50 grams of albumin are advisable initial dosages following severe injury or burns. Subsequent dosage should be regulated by extent of burns, clinical response, pulse, blood pressure and laboratory aids when obtainable. During the first 24 hours, 100 cc. of plasma should be administered, for each 1% of body surface burned, up to 4 or 5 liters.

Although red cells are seldom if ever needed in the initial period following trauma or burns, the use of whole blood later on may be of significant value in determining a patient's prognosis and in shortening convalescence. The amount required at this later period may have been masked by the initial hemoconcentration. (New England J. Med., in press.)

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The Surgeon General, recently returned from a trip to Mexico with the President, expressed himself as very much impressed with the sanitation of Monterrey, Mexico. He feels that under the present Government much emphasis is being placed on public health, and that the good results of this policy are quite evident.

The handling of neuroses at the U.S. Naval Hospital at Parris Island, where these cases are early given active productive occupation on the station farm, was favorably commented upon. The percentage of recoveries is encouragingly high.

Extracts from British Medical Officer's Notes on Battle Casualties from El Alamein: "We are 'debriding' less and less, but certainly in all we try to accelerate healing. Every war wound wants an absolutely fresh outlook at the end of three weeks.

(1) Is this man fit enough? Is he eating and sleeping well? What is his fluid intake? What is his blood picture? Would he be better for transfusion? Many wounded men show a steady drop in hemoglobin down to the 50's and 60's that is very easily missed unless this fresh outlook is insisted on.

(2) Is it not time to close the wound by secondary suture or skin grafting?

(3) Should not the method of traction be altered, the joints be moved, the man be got up?"

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"Two limiting factors, the shortage of water and the need to ensure supplies, keep desert surgery to bare simplicity. The essentials of asepsis are mask and gloves, and these, with shorts for decency, are all that the desert surgeon does wear for most operations. The gloves are scrubbed on the hands and worn till they give out. The Operating Room Assistant handles instruments and towels with forceps, but does not scrub up. The patients' clothes are removed only round the wound, and scrubbing and shaving are also limited to its neighborhood. Only for an abdominal or head wound is the full ritual of two persons capped and gowned adopted."

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"During the recent battle one forward surgeon recorded the following average time between wound and operation:

November 1st to 6th	13.2 hours
" 7th to 12th	44 "
" 13th to 24th	11.7 "

"The first period was one of fighting on a fairly stationary line. The second was a period of advance. The third was also a period of advance, but most of the casualties came from local bombing or mines giving the short average."

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"It has been found that blood is definitely superior to plasma for men who have suffered from a large hemorrhage. Blood, even if it is three or four weeks old, will get such patients fit for operation more quickly, and the effect is more lasting. Plasma is used in burns in preference to blood, and it is supplied to units forward of the M.D.S. where blood cannot be kept in condition."

"It is felt that the internal use of sulfonamides has such a very definite controlling influence on the incidence of sepsis, that extensive debridement on the scale that was considered necessary in the last war should not be now necessary. The essentials are removal of foreign matter and dead tissues, and the relief of tension throughout the track so that any accumulation in the deeper part of the wound will escape more readily to the surface than along intermuscular planes.

"This wound trimming operation consists, above all, of incision of the skin and fascia along anatomical planes to lay all parts of the wound open and a rapid removal of loose tags and shreds of muscle. It is usually followed by local application of sulfanilamide powder and strips of vaseline gauze loosely laid down to the deepest part. The skin, which is of all tissues most viable and most resistant to infection, should be left alone.

"An average surgeon can do three wound trimmings in the time it would take to do one thorough debridement; the patients lose less blood, take less anesthetic, travel better, and their wounds arrive in as good condition."

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"The following are lessons on abdominal wounds of which there were over 500 cases in the recent fighting:

(1) Abdominal wounds, whether before or after operation, travel worse than any other class of injury. They must be operated on at the furthest point forward at which an expert team can be placed. After operation they must be kept till they have established equilibrium -- for four days at least, often for ten. In early battles many patients were evacuated by air after a relatively simple abdominal operation, and died in consequence. It is now the practice to send a certain number of beds to each forward center for the nursing of abdominal cases.

(2) Patients with abdominal wounds are usually badly shocked, but time spent in resuscitation will lessen their chances. A pint of blood may be run in rapidly, but the patient should then be taken to the theater with the drip still running if there seems the slightest hope that he will stand the operation.

(3) When there is a doubt as to whether the abdomen has been penetrated, it is safer to make a small incision above the pubis and pass a swab into the pelvis, than to wait for physical signs of peritonitis.

(4) A straight through incision is preferable to a rectus retracting one; it is quicker and heals better.

(5) The large intestine must be exteriorized and drained after any injury however trivial. If the injured part is mobile, it should be resected and the ends brought to the surface as a double-barreled colostomy. If it is fixed, the injury should be repaired, and a proximal colostomy done. Any injury of the rectum, especially an extra-peritoneal one, demands a proximal colostomy

This principle of exteriorization is perhaps the most important advance in the surgery of this war. In the last war the death rate in injuries of the colon was about 70%; in those of the rectum about 90%. It is now about 50%.

(6) Except in relatively clean cases, a small tube (size 10 catheter) should be put down to the site of maximum soiling, and brought out through the incision. At the end of the operation a suspension of 10 gms. sulfadiazine in 50 cc. of saline is injected slowly down the tube, which is then tied across and tucked in the dressings. More sulfadiazine is put down on one or two subsequent occasions if the progress of the case seems to demand it, and the tube is finally pulled out.

(7) All patients with injury of the intestinal tract or soiling of the peritoneum should be nursed afterwards in the Fowler position, with continuous gastric suction and continuous intravenous fluids."

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Notes from Naval Medical Research Institute:

The Deep Sea Diving Building has been completed. The equipment to be installed will provide a range of pressures from 440 pounds per square inch to less than 2 pounds per square inch, equivalent to a diving depth of 1000 feet and to altitudes above 50,000 respectively.

A distinctive feature of the building is a simulated battleship compartment designed for the study of ventilation problems. The basic idea, as proposed by Commander T.H. Urdahl, in charge of the Air Conditioning Section of the Bureau of Ships, was to create for the purposes of demonstration and research, a classroom in which the various types of environments encountered aboard naval vessels could be demonstrated. This novel compartment is now ready for operation.

The electron microscope is now in daily use. The compartment which houses the electron microscope was designed specifically for the purpose. The installation has been judged the finest now in existence. Work is being continued on the two thin-section technics which are expected to be of broad application to the field of electron microscopy, and may be expected to afford a new approach to the study of old problems. It is believed that this apparatus will contribute to the solution of some of the naval medical problems confronting the armed forces afloat and afield.

A study of semi-rigid litters is being made at the Institute. The object of the study is to incorporate into one litter the suggestions and recommendations made by medical officers at sea to the Bureau regarding a litter for transporting casualties from engine rooms, holds, and other compartments where access hatches are too small or space too cramped to permit use of a Stokes stretcher or an Army litter. Semi-rigid litters already described (Totsuka, Neil Robertson, Arrasmith, Jacobsen, and Andrews-Tozer) have been used as patterns for study.

BUREAU OF MEDICINE AND SURGERY

From: The Chief of the Bureau of Medicine and Surgery.
To: All Ships and Stations.

P3-2/L3(042)
B-DLY
April 16, 1943

Subject: FIRST-AID INSTRUCTION AND TREATMENT OF CASUALTIES;
POSTERS, AS VISUAL AIDS, FOR INSTRUCTION IN USE OF (1) INDIVIDUAL
FIRST-AID PACKET (CONTAINING SULFONAMIDES), AND (2) EMERGENCY
MEDICAL TAG (NEW)

- References:
- (a) U.S. Navy Regulations, Art. 1346.
 - (b) Man. Med. Dept., Chap. 7, Sect. II, para. 836.
 - (c) Man. Med. Dept., Appendix D, Cir. Ltr. P(836, 1201), 7-1-40.
 - (d) Man. Med. Dept., Appendix D, Cir. Ltr. P-2(1201, 1231 (b)), 7-1-40.
 - (e) Man. Med. Dept., Appendix D, Cir. Ltr. P-3(1201, 1229(a) (b)), 7-1-40.
 - (f) Supply Catalog, Med. Dept., U.S.N., (item 1.) Stock No. 2-801, and (item 2.) Stock No. 13-200.

1. The Bureau of Medicine and Surgery has prepared two posters, (1) The Individual First-aid Packet (containing sulfonamides), and (2) The Emergency Medical Tag (new). The subject posters are descriptive of two important items of equipment (references (b) to (f) inc.) employed in the treatment, handling, and evacuation of action casualties occurring in land, sea, and air operations.

2. The object of the subject posters is to have them serve as aids to medical officers and hospital corpsmen in the giving of instructions (reference (a)) to naval, marine corps, and medical department personnel in the composition and proper use of these two items of emergency equipment.

3. Distribution of the posters will be made by the U.S. Naval Medical Supply Depot, Brooklyn, N. Y., to medical officers of activities through which the greatest number of appropriate personnel can be reached. After the initial distribution (for which request is not necessary) additional posters may be had by request on the nearest Naval Medical Supply Depot.

4. The Individual First-aid Packet is furnished to each officer and man before going into action. Every member of the naval service should be thoroughly familiar with the contents and use of the Individual First-aid Packet. This knowledge on the part of individuals, may mean the difference between life and death in case of wounds or injury. The First-aid Packet and its contents are designed to be used by the wounded individual on himself whenever possible. When this has not been done - or is not possible - it becomes the duty of the nearest person to give the treatment and apply the dressing to the injured shipmate or comrade. By understanding and knowing these facts, before being called upon to act, many lives are saved and much unnecessary suffering is prevented.

5. The Emergency Medical Tag is an individual identification and medical-history record. It is used in connection with emergency treatment and evacuation of Navy and Marine Corps personnel who have been wounded, or become ill, when the circumstances of duty are such that routine records cannot be prepared. This condition prevails: (1) when records are destroyed or lost in action; (2) when official records cannot accompany units into action (landing forces, commando, and field combat units); (3) during ship action, and when it is likely that casualties must be quickly evacuated to another vessel; (4) when a shore station is bombed and emergency field conditions ensue; and (5) during any other disaster or circumstance in which emergency medical treatments are given and the preparation of routine official records is precluded or impracticable.

L. SHELDON, JR.
Acting

(Reprinted from Navy Department Semimonthly Bulletin, May 1, 1943.)

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"Science from Shipboard" is the title of an informative handbook written for those who cross the sea in ships. Its educational value is high, and for those only casually interested it may serve to make an otherwise dull or monotonous voyage interesting and one, for this reason, to be remembered. Morale among passengers and crew may well be stimulated by directing their attention to the many intriguing points in the chapters on stars, waves, wind, water, clouds, navigation, fish and oceanic birds - each discussed by an authority in the field. The Red Cross has distributed this little book without cost to the sailors and soldiers on transports. In addition, "Science from Shipboard" has also been published by Science Service at a not-for-profit price of 25 cents. If you want a copy of this 268-page illustrated book, send a quarter to Science News Letter, 1719 N Street, N.W., Washington, D. C.

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Clinical Response to Sulfadiazine Therapy in Acute Diarrheal Diseases:

In all cases treated there was a rapid decline in the number of watery fecal stools during the first twenty-four hours of medication. The response was slower in those with bloody muco-purulent discharges and, presumably, extensive ulcerations.

A review of cases of comparable severity treated with sulfaguanidine revealed a slower and less consistent clinical response. (Hardy and Cummins, Pub. Health Rep., in press.)

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