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MEDICAL NEWSLETTER FOR DOCTORS, DRUGGISTS, SCIENTISTS

The war has disrupted the world-wide exchange of information on progress in all fields of science. Research does continue, however, and to keep you informed of work done in the medical field in the United States, this communication has been prepared by the American Medical Association.

IMMERSION FOOT:

As a result of submarine activity, many survivors of torpedoed vessels have been exposed to unusual physiologic conditions, one of the commonest being painful swelling of the foot and lower legs called "Immersion Foot." This is caused by prolonged chilling just short of actual freezing. Consideration of the known facts concerning the reaction of tissues to cold leads to the conclusion that the common denominator in all conditions that follow thermal insults is injury of the blood vessels and nerves. The ischemia during prolonged exposure to intense cold, according to White, is followed by a period of acute inflammation. The hyperemic reaction of the feet is due mainly to the chemical effects of the products of tissue injury. Paralysis of the vasoconstrictor fibers is an added factor, but is of secondary importance. In spite of the increased flow of blood in the main vessels, there is a disparity between the blood-oxygen supply and demand in the cutaneous capillary bed. Capillary permeability is thereby increased. Edema, pain and petechial hemorrhages as well as the congestion seen when the feet are in the dependent position, are evidence of injury to the blood vessels. By cooling and reducing the local metabolism and need for oxygen, both edema and pain are diminished. The inflammatory reaction and hyperemia fade in a few weeks, and the circulation usually returns to normal at this time. Neuritic pain makes its appearance with partial recovery of the nerves and continues until nerve function is restored. It has disappeared within two weeks in some of the mild cases, but it is impossible as yet to tell how long it may last in the severe ones. In some of the survivors observed in this series, it was troublesome for nearly six months. Much can be accomplished by suitable treatment. This must be directed primarily at reducing local tissue metabolism in the early period and in preventing further injury and infection of the insensitive swollen feet. Gangrene should be a rare complication.

When there is sufficient time before abandoning ship, all hands should get into the most waterproof and loosely fitting boots they can obtain and take along extra pairs of heavy socks. If waterproof boots ship water and are wet inside much can be accomplished by emptying them out periodically and putting on another pair of socks. Frostbite of the hands and feet can be at least partially prevented in many cases by greasing the skin.

The following first aid treatment after rescue is suggested:

1. Give the skin of the feet a preliminary cleansing with soap and cool water. This is to remove superficial dirt and bacteria, which may cause infection of the blisters and thus open the way to cellulitis and moist gangrene. Surgical cleanliness should be scrupulously maintained until the blebs are resorbed and the danger of infection is past. If the blisters have ruptured, do not apply any antiseptics. Dust these raw areas with sulfanilamide powder or cover with sulfathiazole ointment, but if neither is available, leave them alone. On transferring these patients to a

hospital ashore, the feet can best be protected against bacterial contamination from blankets and handling by covering them with a sterile towel or bandage (if available), or clean cotton socks.

2. Keep the feet cool by exposure to the room air. Have no bedclothes below the knees, the room cooled below 70°Fahrenheit and if possible, direct cool air from a blower or electric fan over the exposed feet and legs.

3. Avoid pressure points on the feet, especially the heels, and elevate the feet on a pillow. Under no circumstances permit these patients to sit up with their legs dependent, as this increases swelling. Elevate the legs so that the feet will be above the level of the heart and thereby promote drainage of edema fluid. Remember that anesthetic, swollen feet are vulnerable to trauma and infection. For this reason even gentle rubbing or massage is dangerous.

4. Use codeine or morphine as necessary to control pain.

On arrival in the hospital, the severe cases have pronounced swelling, blebs and discoloration. They have the greatest amount of anesthesia and, for the first few days, the least pain. Hyperemia is striking, with dilatation of the main arteries and prominent veins, but circulation through the cutaneous arterioles and capillaries is nevertheless inadequate, as shown by a dusky cyanotic color and minute hemorrhages in the skin. As explained above, the rationale of treatment at this stage is to reduce tissue metabolism to a point where there is an adequate supply of oxygen to all the cells. This can be accomplished by cooling the skin 5 to 10 degrees F. - to a point below 85°F. Experience has already shown that, under these conditions, color improves, blebs tend to resorb, and edema is reduced. In the mild cases this degree of cooling can be brought about by simple exposure to room air, provided the ward temperature is kept below 70°F. Slightly greater chilling can be obtained by having an electric fan on a bedtable blow air over the feet and this can be rendered more effective still if the patient occasionally sprays water from an atomizer into the stream of air from the fan.

During the most intense stage of hot, congested feet, and also when the neuritic pains are severest, neither of the above measures is effective. Naval medical officers have worked out a very satisfactory type of ice pack for use under these circumstances. This consists of a cotton hand towel to cover the foot; four ice bags applied over the dorsum, soles and sides of the foot; oil-silk wrappings to 12 cm. above the malleoli; a thick insulating pad of fluffed cotton or cellulose; and a rubber pillow-case tied loosely about the calf of the leg. The purpose of this pack is not to induce severe chilling, which might lead to further trophic disturbances, but to cool the skin of the foot and toes to a level between 80°and 85°F. During the early, intensely hyperemic stage a thermocouple inserted next to the skin shows that the temperature of the foot does not fall below 90°F., although the toe temperatures may drop 5 to 10 degrees farther. At this period the active circulation causes rapid melting of the ice. The packs should be changed at four-hour intervals and observations of skin temperature made at these times to control their application. In one instance the feet maintained this intense hyperemia in continuous ice packs for the first eleven days, but on the twelfth day of treatment they became distinctly cool. The ice packs were then discontinued and treatment by exposure to cool air begun.

In carrying out treatment with ice packs it is important to make sure that they do not leak and wet the skin. Each time this has occurred it has caused sogginess and maceration. Measures often helpful include Buerger's exercises prior to getting the patient out of bed and a diet high in protein and vitamin B.

Although it is too early to give accurate statistics of the end results in Immersion Foot it appears that the majority of patients respond favorably to the methods of treatment described in a month or six weeks.

(White, James C.: New England Journal of Medicine, February 18, 1943.)

* * *

PATHOLOGY OF BURNS:

Erb and his colleagues reviewed postmortem findings in 61 fatal cases of burns. Of these, 41 were tanned with tannic acid and 20 were untanned. The more important changes remote from the burned area, and apparently of a toxic origin, involve liver, kidney, gastrointestinal tract and adrenal, while infection of one sort or another takes its added toll. In the gastrointestinal tract, duodenal ulcer was observed five times, one of which was untanned. Esophagitis or esophageal ulceration was observed in five cases, all of which were tanned. Early gastric ulcer, or oozing of blood from gastric mucosa without ulceration, was observed three times. Adrenal hemorrhage occurred four times, in three of which the patient was tanned. Renal damage was shown in the form of precipitate in the glomerular space or tubular degeneration and casts. Most of these occurred from the third to the fifth day inclusive. Signs of repair were noted after the eighth day. Of 41 cases in the tanned group, 25, or 61 percent, showed liver necrosis. The shortest survival time in which necrosis was found was 60 hours, the longest was 19 days. Of the 25 patients showing necrosis, one died in 60 hours, 17 died in the period of three to five days, inclusive, seven died in the period six to nineteen days, inclusive. The degree of necrosis was graded as follows: 4 plus, nine cases; 3 plus, five cases; 2 plus, eight cases, and 1 plus, three cases. Death up to the fifth day was attributed to toxemia. Death from the sixth day on was due, in part at least, to infection of one sort or another. Signs of repair of liver were noted in each of five cases, in which death occurred from the eighth to the nineteenth day. Of 27 tanned cases dying in the three- to 19-day period, only three failed to show liver necrosis. One of these was tanned only 14 hours prior to death, and in another the burned and tanned area had been excised on the third day in an attempt to halt the rapidly increasing toxemia. (The child died of sepsis on the fourteenth day.) No case of liver necrosis occurred in the untanned group, seven of which died in the three- to 14-day period, in which necrosis was an outstanding feature in the tanned group. Kidney damage was observed in 19 cases, all but one of which belonged to the tanned group.

The authors also point out (1) Following the introduction of tannic acid in 1925, the mortality rate from burns fell from 35.2 to 11.8 percent prior to the use of sulfonamides, and to 2.9 percent since their introduction, along with other measures. (2) Also following the introduction of tannic acid the time at which death usually occurs has shifted from the early period (first 12-36 hours) into the period of toxemia (third to sixth day), a period in which liver necrosis is most frequently observed. (3) The patients dying with liver necrosis, apart from those dying of sepsis, presented, on the whole, the same clinical picture of toxemia as did those without liver necrosis who were untanned and died in the same period. (4) The liver necrosis, therefore, whatever its cause, is not necessarily the cause of death, although it may be a serious complication. (5) It has been shown that this necrosis of liver may undergo repair. (6) The survival for seven days of one patient with 40 percent burn, tanned within six hours, and showing at autopsy a normal liver, may point the way to a search for some therapeutic agent to be used in combination with tannic acid, by which the

benefits of tannic acid may be preserved and by which, at the same time, the liver may be protected from necrosis, be that necrosis the result of absorption of a toxic substance from the burned skin, the direct or indirect result of tannic acid, or a combination of both.

(Erb, I.H., Morgan, Ethel M., and Farmer, A.W.:
Annals of Surgery, February 1943.)

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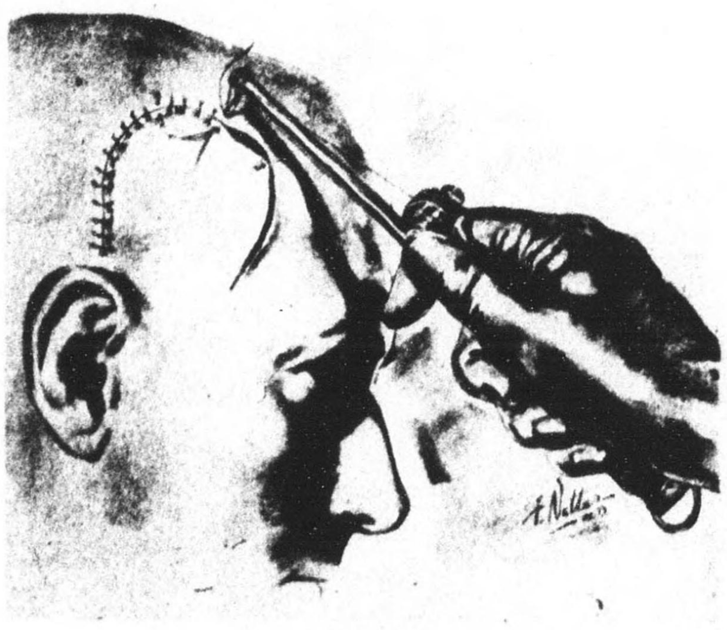
WHAT U.S. DOCTORS ARE TALKING ABOUT:

The new automatic sewing device developed by the Singer Sewing Machine Company.



This is Singer Sewing Machine's new surgical stitcher in action, closing a scalp incision. The instrument speeds up suturing by providing a continuous surgical thread, making it unnecessary to stop to rethread a needle. By pressing a button with his thumb, the surgeon can regulate thread tension to keep it feeding as he wants it. Needles can be set at eight different angles, so that a surgeon can get at tissues on the surface or deep inside; they come in several types and sizes. A variety of stitches is possible, including a sort of chain stitch which can be pulled out in one piece when the wound has healed.

The Medical Conference, held in New York City under the auspices of the Carlos Finlay Institute of the Americas, on planning for war and post-war medical services. The danger from tropical diseases, influenza, malaria and nutritional diseases after the war was considered, along with a warning that drugs and other medical supplies left over after the war should not be dumped without consideration upon a disorganized world.

The results obtained in an experiment on a group of soldiers, wherein sulfathiazole administered orally appears to be an effective preventive against gonorrhea and chancroid. A company of 1400 troops was given sulfathiazole prophylaxis of 2 grams before leaving the fort on pass. Those taking station prophylaxis received no further drug. All others received 4 additional grams, 2 on returning to the fort and 2 the next morning. In this company there has occurred a phenomenal disappearance of gonorrhea and chancroid. It is concluded that the evidence obtained justifies further extensive studies of this problem.

The announcement of the discovery that biotin plays an important role in resistance to malaria. Chickens and ducks on a raw-egg-white diet for two or three weeks developed a more severe malaria than chickens and ducks that were not deficient in biotin. The number of malaria parasites in the biotin-deficient fowl after experimental inoculation rose to higher levels than in the controls, stayed at higher levels for several days longer, and more animals died of the malarial infection.

* * *

COMPARISON BETWEEN PSITTACOSIS AND ATYPICAL VIRUS PNEUMONIA:

"Acute atypical pneumonia" is defined as a form of interstitial broncho-pneumonia, not usually accompanied by secondary bacterial invasion, and characterized by bradycardia, headache, dry cough, low or normal white count, and failure to respond to the sulfonamides. While the term may well be used where no etiologic agents have been identified, when they can be isolated from cases of this type, they are found to belong to a related group of viruses. The first isolated example of this type of pneumonia is psittacosis or ornithosis. Its history is traced from its initial description in 1879, through the discovery of its virus etiology in 1930 during the international epidemic, to the ecologic investigations of the last few years. Interstitial pneumonia has been described in cases of influenza, measles, pertussis and varicella, and in these instances may be due entirely to the action of either a virus or a bacterium, or frequently to a combination of the two. It has also been observed in the course of acute rheumatic fever (rheumatic pneumonia) and after irradiation of the thorax, and for that reason probably represents a pathologic response to a number of types of pulmonary irritants. Comparison of the incubation period, symptoms, clinical course, pathologic and laboratory findings in ornithosis (psittacosis) with those in the human atypical pneumonia group reveals very striking similarities. The results of virus studies and serologic tests in these diseases also indicate this close relationship. One probable and 2 definite cases of ornithosis observed in the course of eighteen months in Boston are presented by Favour. He emphasizes the frequency with which ornithosis virus may cause atypical pneumonia in man. Careful questioning about contact with varieties of birds known to harbor the virus, and complement-fixation tests on acute and convalescent sera should be performed in order to make the diagnosis. He suggests that cases of human atypical pneumonia from which no etiologic agents have been isolated may be due to a virus of the psittacosis group which has become fixed in man and is usually incapable of heterogeneous parasitism.

(Favour, C.B.: Am. J. M. Sc., February 1943.)

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PLACENTAL TRANSMISSION OF SULFONAMIDES:

The organisms most frequently encountered in severe neonatal infections, such as the hemolytic streptococcus, staphylococcus and colon bacillus, are among the most responsive to sulfonamide treatment. The sulfonamide drugs, similarly, are highly effective against the gonococcus. It is, therefore, important in considering the possible extension of the scope of fetal prophylaxis and intrauterine therapy to seek further knowledge on the transmission of the sulfonamide drugs. In this study Speert found that sulfathiazole and sulfadiazine, like sulfanilamide, diffuse readily across the placenta. Following the intravenous administration of a single 5 gm. dose of sodium sulfathiazole or sodium sulfadiazine to the mother during labor, these drugs appear in the fetal blood almost immediately and are retained there in therapeutically effective concentrations for at least six hours in the case of sulfathiazole and considerably longer in the case of sulfadiazine. Equilibrium between maternal and fetal blood is established within three hours. Sodium sulfadiazine results in a higher concentration of the drug in the fetal blood than does an equal dose of sulfathiazole. These drugs appear also in the amniotic fluid, but more slowly than in the fetal blood. The intravenous maternal injection of sodium sulfathiazole or sodium sulfadiazine is suggested as a method of treating the fetus in utero in cases of intercurrent or intrapartum infection caused by susceptible organisms. When the lower genital tract of the mother harbors the gonococcus, the establishment of an adequate sulfathiazole or

sulfadiazine concentration in the fetus prior to delivery would appear indicated as a prophylactic measure.

(Speert, Harold: Am. J. Obst. & Gynec., February 1943.)

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BUFFERED SULFANILAMIDE FOR PRIMARY CLOSURE OF PILONIDAL CYST:

This paper is an analysis of the immediate results in wound healing of 94 cases of pilonidal cyst in which primary wound closure was attempted. In 38 of the 94 cases infection was grossly apparent on admission to the hospital, requiring incision and drainage as the initial procedure. For the 56 relatively uninfected cases no routine preoperative topical therapy was employed. From the military point of view, Scott believes that primary closure is the method of choice. In comparing technics in which no drug was employed and in which sulfanilamide and buffered sulfanilamide were used, the results showed that the use of buffered sulfanilamide powder dusted into the wound at the time of operation definitely reduced the percentage of postoperative wound infection. This was an effect which plain sulfanilamide alone failed to produce. His buffered preparation contained 10 percent calcium carbonate in addition to the conventional crystalline sulfanilamide. He concluded that this local use of buffered sulfanilamide in traumatic war wounds may be suggested from the standpoint of availability, economy and efficiency.

(Scott, J.V.: Annals of Surgery, February 1943.)

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MULTIPLE GASTRIC POLYPOSIS:

This report is an analysis of 41 cases of gastric polyposis having three or more polyps, including three new personally observed cases. Multiple gastric polyposis may be congenital (neoplastic) or inflammatory (hyperplastic). The two types may often be differentiated on gross examination alone. On microscopic examination one finds that in neoplastic polyps the muscularis mucosae enters the tumor for a variable distance and usually becomes fragmented or split, with the submucosa entering the tumor for a variable extent. In the hyperplastic types the muscularis mucosae is intact and forms a delineating membrane, the submucosa playing no part in the formation of the tumor. Borderline cases may be difficult to classify. The symptoms are not characteristic. In the series, epigastric pain and tenderness were most frequent. In over half of the cases, bleeding was found to take place in the vomitus, stool or gastric content. Pedunculated tumors and those near the pylorus are more apt to give symptoms of separation of polyps or pyloric obstruction. Some patients have had symptoms over twenty years. The physical findings are indefinite and may be entirely lacking. The diagnosis is attended with considerable difficulty. The x-ray may fail to differentiate multiple polyposis from chronic hypertrophic gastritis, retained food, bezoar or sarcoma. The correct diagnosis was made most often by x-ray and by operation, but the condition was often overlooked by the roentgenologist. Gastroscopy is a valuable aid in the diagnosis of gastropathies, especially in the differentiation between benign and malignant lesions and between polyposis and hypertrophic gastritis. Both methods are complementary and their combined use will greatly enhance our diagnostic acumen. Free hydrochloric acid was absent from the fasting gastric content in almost every case. Careful search should be made in the gastric content for tumor particles which

may establish the diagnosis. In their previous series, malignant alteration was noted in 12 percent. Of the present series of 41 collected and personal cases since 1926, four gave no malignancy data. Of the remaining 37, malignant alteration was found in 19. This alone argues for radical surgical removal of the tumor-bearing area by gastric resection as soon as the diagnosis is made and the patient is properly prepared. Further confirmation for this policy is afforded by the separate analyses of a small number of benign and malignant cases in which patients were treated either by excision of polyps or by gastrectomy; these show a great superiority of results in gastrectomized subjects.

(Pearl, F.L., and Brunn, Harold:
Surg., Gynec. & Obst., March 1943.)

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LOCALIZATION OF LEAD IN BONE TISSUE:

The lead stored in bone tissue is of great significance in the study of lead poisoning, but heretofore technical limitations have hampered this type of study. Now Fairhall describes a method in which potassium chromate is employed by which unstained sections may be examined under a polarizing or crystallographic microscope, since the lead chromate deposit is thrown into brilliant relief against the background. This constitutes a method of positively identifying lead in the bone tissue and permits detailed investigation of the lead deposit. It has been shown that while the epiphyseal portion of bone is rich in lead, particularly in the early stage of lead absorption, deposition occurs throughout the compact tissue on all surfaces over which blood passes. X-ray studies of the bones of lead-poisoned animals indicate that the amount of lead, whether segregated or diffused, even in the absence of calcium, is insufficient to be revealed by ordinary x-ray photography. Deposition of lead was shown to occur in the fat cells of the red marrow. Lead storage in bone tissue occurs first as colloidally dispersed and finally as segregated crystalline masses.

(Fairhall, L.T.: Publ. Health Rep.,
February 1943.)

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MEDICAL NEWS LETTER FOR DOCTORS, DRUGGISTS, SCIENTISTS

The war has disrupted the world-wide exchange of information on progress in all fields of science. Research does continue, however, and to keep you informed of work done in the medical field in the United States, this communication has been prepared by the American Medical Association.

* * *

NON-SPECIFIC THERAPY IN ANTERIOR POLIOMYELITIS:

This report is part of a wider study involving the determination of the place of non-specific therapeutic agents in the treatment of the diseases of the nervous system. The material included in this study consists of a group of patients with anterior poliomyelitis observed in the various stages of the disorder, most of them referred through the crippled children's clinics of the state of New Hampshire. Vitamin B and vitamin E as found in wheat germ oil and artificial fever were used in the treatment of the acute and subacute stages of the disease. Twelve patients were seen in the acute stage of the disorder. Six of these received artificial fever besides vitamin therapy, and six received vitamin therapy only. None of the patients treated -- all except one had paralyses of varying degree of severity -- developed any deformities or contractures. The stage of muscle tenderness was greatly diminished in all cases, especially in those who received artificial fever combined with vitamin medication. While thiamine chloride deficiency as a contributing etiologic factor in precipitation of an attack of anterior poliomyelitis cannot be established, its administration intravenously or intramuscularly during the acute stage appeared to exert a non-specific beneficial influence on the patients' general condition and appeared to lessen the severity of the paresthesias displayed by these patients. It was found to be most effective when combined with the artificial fever and given during the height of the fever. Vitamin E appeared to lessen the tendency to development of fibrositis, produced increase in muscle tone in chromic patients, and possibly favorably influenced muscle regeneration in cases where the nerve supply has not been completely destroyed.

Artificial fever therapy was well tolerated by all patients in temperature range of from 102 to 105° F. during the acute and subacute stages of the disease. It helped to reduce muscle tenderness, relieved vasospasm and muscle spasm, improved circulation of the spinal cord and brain by increasing the oxygen supply to the central nervous system, thus improving the nutritional states of neurons not completely destroyed by disease. When combined with vitamins B and E it brought rapid improvement of symptoms in patients displaying progressive fibrositis. The authors suggest that while vitamins B and E and artificial fever are non-specific in their mode of action, they represent the most valuable adjuncts in the treatment of anterior poliomyelitis in the acute and subacute stages of the disease. They probably assist in regeneration of neurons partially affected by the virus, improve the patients' general sense of well-being, and assist in prevention of excessive fibrosis, a frequent cause of deformities and contractures.

(Stone, Simon: Journal Pediatrics, February 1943.

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ABSORPTION AND EXCRETION OF SULFONAMIDE COMPOUNDS SUSPENDED IN OIL:

The local treatment of wounds with sulfonamide compounds has become almost a routine procedure. The compounds may be applied in powder form or mixed with different vehicles. It seemed highly probable to Angevine that these drugs, when suspended in oil, would reach all parts of a wound in relatively high concentration and that they would be less rapidly absorbed and therefore effective locally over a longer period than when instilled in powder form. The sulfonamides tested were suspended in soybean oil, corn oil, sesame oil, peanut oil, cottonseed oil and olive oil and also in hydrous wool fat and yellow petrolatum. It was concluded that sulfanilamide, sulfathiazole, sulfadiazine and sulfapyridine can be suspended in oil in high concentrations. Suspensions of sulfanilamide and of sulfathiazole in soybean oil produced only a slight local reaction when injected subcutaneously into experimental animals. In animals, a single subcutaneous injection of sulfanilamide, sulfathiazole or sulfadiazine suspended in oil was absorbed at a uniform rate and produced a concentration of the drug in the blood for as long as eight days, depending on the dose. The excretion of drug in the urine continued for several days after it had disappeared from the blood. Suspensions of sulfanilamide or sulfathiazole in soybean oil were instilled into the infected sinal tracts of 5 patients with osteomyelitis. Drug was present in the blood for six days and was excreted for as long as one hundred and thirty-seven days. The sinuses of 2 of these patients are completely healed, and the others are improved. From this experience in animals and in these few patients, the author believes that this method of therapy deserves a further trial in chronic osteomyelitis and in other types of infected wounds.

(Angevine, D.M.: War Medicine, February 1943.)

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PULMONARY MANIFESTATIONS IN EXTRAPULMONARY TUBERCULOSIS:

The chest films of 100 unselected patients with extrapulmonary tuberculosis were analyzed in an attempt to determine the relative frequency and character of co-existing pulmonary tuberculosis. For the sake of comparison and in order to weight the practical import of results more carefully, another 100 cases of adult pulmonary tuberculosis with no clinical evidence of extra-pulmonary tuberculosis were reviewed. In the group of 100 patients with extra-pulmonary tuberculosis, 79 showed roentgenological evidence of postprimary pulmonary involvement. The pulmonary lesions in the majority of these 79 cases were fibrotic and calcific, apparently inactive, with proliferative, nodular and exudative manifestations decreasingly common in this order. The character of these lesions, their tendency toward bilateral, symmetrical apical and subapical distribution, seen in 44 of the 79 cases, would seem to indicate a hematogenous origin and emphasize the systemic nature of the disease. Roentgenographic evidence of cavitation was seen in 15 cases. These cavities were mostly thin-walled with bilateral symmetrical distribution and, in spite of the fact that 12 of these cases had positive sputa, only one showed evidence of bronchogenic spread. In cases in which multiple films were available, stability or regression of the pulmonary lesion and the absence of bronchogenic spread were the outstanding features. Though progressive pulmonary lesions did occur, for the most part they were of hematogenous nature.

The following features, as determined from this study, may be listed as characterizing the pulmonary lesions associated with extrapulmonary tuberculosis: Predominance of fibrocalcific lesions, apparently inactive; bilateral, symmetrical apical and subapical distribution; cavities, when present, thin-walled and with tendency to

symmetrical distribution; relative absence of bronchogenic dissemination; evidence of regression or stability in the pulmonary lesion with superimposed hematogenous spread a not uncommon feature.

Review of the chest films of 100 control patients admitted to the tuberculosis unit with no clinical evidence of extrapulmonary tuberculosis emphasized the acute exudative caseous nature of the usual adult pulmonary tuberculosis with its tendency to bronchogenic spread. However, a small percentage of the patients in the control group without evidence of extrapulmonary tuberculosis exhibited a pulmonary picture similar to that found in the group with known extrapulmonary foci. These few cases demonstrated bilateral, symmetrical lesions with tendency to chronic course and absence of bronchogenic spread.

The ability to recognize the chronic disseminated or hematogenous form of pulmonary tuberculosis, it was concluded, would seem to be of value in prognosis and treatment to both the surgeon interested in treating extrapulmonary tuberculosis and the tuberculosis specialist.

(Tepper, Leo and Jacobson, George: American Review of Tuberculosis, February 1943.)

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WHAT U.S. DOCTORS ARE TALKING ABOUT:

Raymond B. Fosdick, president of the Rockefeller Foundation, has announced the development of a new type of vaccine against yellow fever. Four million doses of this vaccine were distributed in 1942, and mass vaccination of the population in Africa was undertaken as a precautionary measure after field investigations in certain areas showed a high prevalence of the Aedes aegypti mosquitoes. American troops, therefore, are in no danger of being victims of yellow fever.

Soviet physiologists now possess methods which infallibly secure maximum adaptation of the human eye to darkness within five or six minutes after passing from light to darkness. This is achieved not by pharmaceutic preparations, but merely by applying a principle drawn from science of the interaction of afferent systems of the organisms. Although the method is not described by the Russian scientists, apparently it includes weak excitations of the organs of sense of hearing, taste, or smell, which thereby increases the sensitivity of other sense organs, such as the eye. They say it also has been found that the stomach, intestine and bladder should not be too full if good night vision is to be obtained, and that it has been demonstrated that changes in the sensitivity of night vision could be obtained by conditioned reflexes.

New evidence of a relation between cancer and hormones has been reported. It has been found that cancer of the outer part of the adrenal glands, relatively rare in both man and laboratory animals, can be induced in a large percentage of mice of one strain by removal of the sex glands. This discovery, added to other observations showing sex hormones have an influence in the formation of certain types of cancer, suggests, the scientists point out, the lack of proper balance between the various hormones may be one factor leading to certain forms of cancer.

Saving of 75 percent in weight and space needed for shipping human blood serum to the theaters of war is promised by a very simple apparatus in which the essential element is a short piece of cellophane tubing. The tubing is tightly attached as a kind of shirt to the open end of a glass bell, like a bent-necked bottle without a bottom. The lower end of the tube is folded over a narrow strip of wood and clamped tightly

against a second strip. A bottle of serum is connected with the neck at the top, and the whole thing is heated under steam pressure to sterilize it. The water from the serum evaporates slowly through the sheet-cellulose bag, under encouragement of a constantly moving current of warm air, until the volume is reduce by three-fourths. Then the condensed serum is poured, still under aseptic conditions, into a storage bottle, which is kept at low temperature in a refrigerator. Before using, sterile distilled water may be added to restore normal volume.

A new U.S. Army school has been opened to teach medical officers from civilian life how to handle mental ills which develop in military training and under the strain of mechanized, global war. The special strains put upon the mind, nerves, and emotions of soldiers will be discussed as part of the course. Since the civilian physician specializing in mental illnesses is seldom faced with problems like those encountered in the army, the medical officers will learn how to cut the time they take to observe and treat individual patients to the brief periods that military emergencies permit.

Caudal analgesia, the new method of making childbirth safe and painless, may prove a great boon to the war wounded. It has been used in 255 cases in general surgery with only three failures. "It would seem," the doctors report, "that this method is adaptable for use in the treatment of casualties both in civilian and military practice where it would be desirable to have a safe, prolonged analgesia during the transportation and the physical and roentgenologic examinations of the injured." The new anesthetic method consists of the continuous injection of metycaine near the base of the spine. The drug temporarily blocks the nerve pathways for pain below the level of the umbilicus, but does not cause unconsciousness.

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REPLACEMENT THERAPY IN ACHLORHYDRIA:

This study has been aimed at evaluating acid replacement therapy from a standpoint of actual lowering of the pH in the presence of a normal meal and the effectiveness of such lowering as related to several of the well-known physiologic functions of normal gastric acidity. From these studies, it was concluded that the addition of acid to a representative ground meal at body temperature in vitro shows that the usual amount of acid used in replacement therapy has but little relative effect on the pH of the meal, because of the buffer value of the food. The amount of any acid necessary to bring the pH of a meal to the normal physiologic post-meal range (pH 1.6 to 1.8) or for peptic activation (below pH 2.0) is of such magnitude that practical aspects preclude its administration. For U.S.P. hydrochloric acid this amount would be 35 cc. Even twenty 420 mg. capsules of glutamic acid hydrochloride with a meal would fail to produce normal acidity or activate pepsin. Upon acid addition, different foods have a buffer or neutralizing effect approximately proportional to their protein content. For this reason an average large meal may have from 15 to 20 times the neutralizing ability of the usual Ewald test meal of 3 Gm. protein. Consequently the evaluation of acid replacement therapy with an Ewald meal may give altogether erroneous results. Except for gelatin, the swelling of proteins as a step in solution and digestion is not appreciably influenced by even the largest doses of acid advocated in replacement therapy. In fact, the usual doses of acid advocated bring the pH of a meal to the range of minimum swelling of the proteins. Usual acid replacement therapy does not bring the pH sufficiently low to have any appreciable bactericidal effect. Certain strains of staphylococci and coli are uninfluenced by exposure in a meal to the maximum amount of acid therapy practical. In fact, only complete attainment of the normal post-meal gastric pH gives anywhere nearly complete bactericidal action, and even this pH may not be effective within the normal emptying time of the stomach for certain acid-resistant,

encapsulated or sporulated organisms. On the other hand, certain types of pathogenic organisms are very sensitive to even slight lowering of the pH below neutrality and acid therapy might well be a factor in their destruction. Decreasing pH values from 6.5 to 1.5 are instrumental in proportionally increased liberation of calcium from milk over a three hour period. On the basis of complete equilibrium, maximum calcium liberation should occur at the isoelectric point of casein, pH 4.7, but during a three hour period of incubation complete equilibrium has not been obtained and further lowering of the pH results in more rapid liberation of calcium. Anacidity or hyperacidity has no effect on thiamine destruction. The amount of hydrochloric acid secreted by the stomach for an average meal must be in excess of 104 cc. normal, 35 cc. U.S.P., or 3.8 Gm., as calculated from their data.

(Koehler, A.E., and Windsor, Emanuel: Annals Internal Medicine, February 1943.)

* * *

DEVELOPMENTAL CATARACTS:

This paper summarizes the results of surgical treatment in 131 cases of developmental cataracts at the Ophthalmic Clinic of the University Hospital (University of Michigan) between the years 1925 and 1942. From this review it was concluded that persons with developmental cataracts are extremely likely to have associated ocular or constitutional congenital anomalies. These persons have poor protoplasm. It was suggested that in the case of complete bilateral cataracts, operation be performed on one eye after the patient reaches 6 months of age. The other eye may be surgically treated after the age of 2. If the cataracts are incomplete and the child can get around, surgical intervention should be postponed until the third or fourth year of life. In the present series, in very young children discission of the lens capsule proved to be the safest technic, and although complications were frequent they were fortunately minor. The best visual acuity was obtained when the combined technic of discission and linear extraction was employed. Of 233 eyes, 83, or 35.5 percent, obtained a final visual acuity of 6/12 or better and have permitted the patients to maintain a useful place in society. Contraception is urged when the cataract is familial. Sterilization is recommended when the offspring displays a lenticular defect which is proved hereditary. Surgical intervention in early life is hazardous, as shown by the fact that a high percentage of complications and 33 percent of the total failures (from light perception to no vision) occurred in the age group under 2 years.

(Falls, Harold F.: Archives of Ophthalmology, February 1943.)

* * *

POSSIBLE SIGNIFICANCE OF RODENTS IN EPIDEMIC OF POLIOMYELITIS:

In the fall of 1942 a small epidemic of five cases of poliomyelitis occurred in a sharply circumscribed half square mile area in White Plains, New York. These cases followed each other in rapid sequence between the end of September and the beginning of October. They were the only cases of this disease reported in the entire city during the year 1942. The epidemic involved two adults and three children. Two patients died of bulbar paralysis and three recovered with extensive peripheral paralysis. In searching for a possible extrahuman source of contagion among rodents, a dead gray mouse was discovered in the home of one of the fatal cases shortly after the patient's admission to the hospital; the animal had been dead for only a short time. A second gray house mouse was trapped in this basement on the same day and additional mice, dead or alive, were later collected in other parts of the epidemic area. The brains of all mice were removed and after storage in glycerin for a few days failed to cause

any growth when inoculated in ordinary bacteriologic media. Saline suspensions were prepared from these mouse brains and injected intracerebrally into albino mice. Definite symptoms were observed in some albino mice following injection with brain material from three different house mice. Symptoms appeared after an incubation period of from five to fourteen days and were characterized by ruffled fur, excitement, strong tremor, nervous movements of the forepaws and occasional convulsions with respiratory failure. In some mice these initial symptoms progressed to paresis of both front and hind legs and terminated in death. The syndrome was further transmissible in albino mice by intracerebral but not by intraperitoneal transfer. With later passages mice could also be infected by the intraperitoneal route. Intracerebral injection of passage-mouse brains into rabbits, guinea pigs or rhesus monkeys failed to produce symptoms but transfer to one cotton rat and two hamsters succeeded with third and ninth brain passage, respectively, leading to prostating paralysis in the injected rodents. The exact nature of this virus is not known at present. Another rodent-pathogenic virus capable of inducing paralysis in albino mice, cotton rats and hamsters was isolated from the brain stem of one of the fatal cases. The two viruses when passaged in albino mice were similar in that both were completely inactivated by antisera against Theiler's virus of mouse encephalo-myelitis and showed some neutralization with convalescent sera from patients involved in this epidemic. They differed, however, in virulence for albino mice in that the human virus was much more potent than the mouse virus. Final identification of the infectious agents from these two sources and the relationship, if any, which may exist between the local carriage by house mice and the synchronous outbreak of human poliomyelitis are problems which deserve and are receiving further investigation.

(Jungeblut, Claus W. and Dalldorf, Gilbert: American Journal of Public Health, February 1943.)

* * *

ORAL EFFECTIVENESS OF ESTRONE SULFATE IN WOMEN:

Estrone sulfate is a naturally occurring estrogen found in the urine of pregnant mares. It is water-soluble and according to available laboratory evidence is several times more potent than free estrone by mouth when administered to spayed rats. The average therapeutic dose of estrone sulfate is approximately 1.2 mg. daily in three divided doses when administered orally.

Freed and his colleagues attempted to determine whether or not there was a greater sense of well being in those patients who received estrone sulfate than in those who received a comparable therapeutic amount of diethylstilbestrol. Although acknowledging the difficulty of obtaining this information, these investigators obtained the impression that a significant number of patients preferred the natural estrogen to diethylstilbestrol because of a greater sense of general relief exclusive of the amelioration of hot flashes. In their work estrone sulfate was administered to a group of women with distinct symptoms of the menopause. Optimal results were obtained with 1.2 mg. daily in three divided doses. This preparation is relatively non-toxic in the average therapeutic dose. In the human female relatively little of the estrogenic activity of estrone sulfate is lost through oral administration, a finding which is contrary to results obtained in laboratory animals.

(Freed, S.C., Eisin, W.M. and Greenhill, J.P.: Journal of Clinical Endocrinology, February 1943.)

* * *

EFFECT OF ADMINISTRATION OF ALKALI ON THE HUMAN KIDNEY:

This investigation comprises a study of the autopsy observations in 14 patients who had received during life large amounts of alkali and for whom adequate studies of acid-base were available. The series is composed of 4 patients (group 1) who had taken large amounts of alkali but in whom alkalosis had never occurred; 6 patients (group 2) who had experienced one or more episodes of alkalosis during alkali therapy but who did not die in alkalosis, and 4 patients (group 3) who had taken large quantities of alkali and in whom alkalosis was present at the time of death. Special histologic changes were not noted in the glomeruli of the kidneys of these 14 patients after prolonged alkali therapy with or without alkalosis. The epithelium of the collecting tubules in the kidneys of 6 patients showed degenerative and regenerative changes. There was precipitation of calcium in the lumens of these tubules. The tubules which did not contain calcium usually appeared normal. Three of these 6 patients had previously experienced alkalosis but did not die during the acid-base disturbance; alkalosis was present at the time of death in the other 3. All 6 patients had lost excessive amounts of chloride by vomiting or therapeutic aspiration. Similar changes were observed in a patient not receiving alkali but in whom severe hypochloremia and alkalosis developed as a result of gastric aspiration.

(Kirsner, J.B.; Palmer, W.L., and Eleanor Humphreys: Archives Pathology, February 1943.)

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DUODENAL ULCER SYNDROME CAUSED BY ANKYLOSTOMIASIS:

It is well known that gastrointestinal disturbances caused by hookworm disease may appear in different clinical forms, including that of duodenal ulcer. Symptoms are often vague and indefinite, the patients complaining of heartburn, flatulence, a feeling of fullness of the abdomen and irregular bowel movements. In this report from the American University, Beirut, Syria, 25 patients whose clinical history was suggestive of chronic duodenal ulcer but in whom stool examinations revealed presence of ova of Ankylostoma duodenale were studied with regard to gastric acidity and roentgenologic findings. Estimation of free gastric acidity showed a rise to a higher level in these patients than that obtained in duodenal ulcer. In spite of varying degrees of severe anemia, such a high gastric acidity was maintained. Roentgenologic studies of these cases showed evidence of swelling of the duodenal mucosa, inconstant deformity of the duodenal bulb (duodenitis without ulcer niche), hyperperistalsis of stomach and duodenum, and, commonly, reversed peristalsis of the duodenum without obstruction. Administration of a vermifuge successfully resulted in the elimination of epigastric pain within twenty-four hours, and the restoration of the duodenal wall in from eleven to twenty-four days in these cases.

(Yenikomshian, H.A., and Shehadi, W.H.: American Journal Roentgenology, January 1943.)

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MEDICAL LETTER FOR DOCTORS, DRUGGISTS, SCIENTISTS

The war has disrupted the world-wide exchange of information on progress in all fields of science. Research does continue, however, and to keep you informed of work done in the medical field of the United States, this communication has been prepared by the American Medical Association.

* * *

VASCULAR AND NEUROLOGIC LESIONS IN SURVIVORS OF SHIPWRECK:

This paper is the second of two by the same author discussing so-called immersion foot. In this paper, however, the painful swelling of the feet was observed in two lifeboat crews adrift for long periods in southern waters. The resultant painful swelling of the feet differs fundamentally, he believes, from the type of immersion foot previously described as developing in the survivors of vessels lost in colder waters. Both groups of men had edema of the feet due to prolonged dependency and immobility. In the case of the men torpedoed in the north, additional swelling and neuritic pain were caused by direct injury to the skin, cutaneous capillaries and nerves by immersion in cold water. Immersion in warm water per se cannot account for either edema or pain in the legs and feet. Therefore the syndrome reported here should not be classified as immersion foot. In most of the men who were adrift for long periods in southern latitudes, direct thermal injury can be excluded (at least in the crew of lifeboat B.) Hypoproteinemia from starvation was an additional cause of swelling in the survivors. Edema of this type is not generally considered to be painful. It is postulated, but not proved, that the stomatitis, sensory disturbances in the hands and feet, and plantar tenderness that developed in these patients were caused by a deficiency of the anti-neuritic factor and other components in the vitamin B complex. Evidence is quoted to show that such a deficiency may occur at a greatly accelerated rate in the rapid tissue-oxidation reactions that take place in men who are forced to do hard physical work in a hot climate on a very inadequate fluid intake. An added deficiency in vitamin K was suspected in 3 cases in which the prothrombin times were determined, and loss of blood in the stools was a common occurrence. The possibility that a deficiency of vitamins B and K may develop as a complication of shipwreck in such a brief period as two and a half weeks has not heretofore been suggested.

(White, J.C.: New England Journal of Medicine, February 25, 1943.)

* * *

THE HEART IN PULMONARY TUBERCULOSIS:

This communication is a report of the cardiac lesions found among 100 cases of pulmonary tuberculosis upon whom necropsies were performed at City Hospital, Welfare Island, New York. Demonstrable myocardial lesions were present in 69. They consisted of tuberculous myocarditis in 10, acute rheumatic myocarditis in one, Aschoff body-like lesions in 9, acute interstitial myocarditis in 50 and acute miliary infarctions in 11. Combinations of the lesions were found in 13. Healed rheumatic valvulitis was found in 5, sclerotic lesions of the mitral and aortic valves in 20, acute valvular endocarditis in 2 and syphilitic aortic valvulitis in 2. There were 3 instances each of tuberculous, chronic and adhesive and acute non-tuberculous pericarditis. Tuberculous myocarditis was more frequent in the adults than in children. Non-tuberculous

pulmonary infections appeared to be a significant factor in the causation of the interstitial myocarditis. Miliary infarctions occurred predominantly in the hypertrophied hearts, in hearts with severe coronary arteriosclerosis and in the later decades of life. The conception of a small heart in tuberculosis was not substantiated. Right ventricular hypertrophy was very uncommon. Mensuration of the ventricular wall appeared to be an unreliable criterion for hypertrophy; the microscopical appearance of the myocardial fibres appeared more accurate. A moderate or severe disproportion between pulse rate and height of temperature was suggestive of myocardial disease. Murmurs due to organic valvular lesions were fairly common. Functional murmurs were uncommon. The conception that hypertension and active tuberculosis are incompatible was not borne out. Electrocardiographic tracings frequently revealed significant observations. While the present series is too small to permit definite conclusions about many controversial points, it is the belief of the authors that more attention paid to the cardiovascular system in the tuberculous individual will result in a more accurate estimation of existing cardiac damage.

(Roberts, J. Eugene and Lisa, James R.: American Review of Tuberculosis, March 1943.)

* * *

BACTERIOPHAGE THERAPY OF STAPHYLOCOCCIC SEPTIC OBSTRUCTION OF THE CAVERNOUS SINUS

In this paper are presented the records of 45 patients with staphylococcic obstruction of the cavernous sinus treated with bacteriophage during a ten year period, 1931 to 1940. Of these patients 31 percent survived the infection, 51 percent succumbed within five days and 18 percent died after a prolonged illness. Most of the patients were included in the staphylococcemia series previously presented, but in six instances, 4 of them fatal cases, proof of invasion of the blood stream was lacking. The recovery rate of 31 percent in this series is not appreciably lower than that determined for the entire staphylococcemia series of 500 patients. Rapidly progressive phlegmonous inflammation of the face extending to the eye should be promptly diagnosed as malignant staphylococcic infection and should be treated as such immediately, pending confirmation or refutation of this diagnosis by bacteriologic studies. The patient should receive staphylococcus bacteriophage intravenously in a series of regularly spaced increasing doses until a chill results or until a total amount of 500 to 1,000 cc. has been administered on the first day. Subsequently the bacteriophage should be injected at least twice daily until the patient appears normal and then once daily for two weeks. It should then be administered once or twice a week for six months. Too early discontinuance of bacteriophage therapy would appear to have contributed to some of the late deaths in our series. Prolonged bacteriophage therapy is earnestly recommended in cases of apparent recovery in order to prevent recrudescence of the disease and various late complications, especially intracranial abscess. Sulfathiazole should be given promptly, 8 to 12 Gm. on the first day and 4 to 8 Gm. daily thereafter for ten to fourteen days. Use of this drug should then be discontinued because of the risk of toxic complications. Treatment of facial furuncles by squeezing, by incision or by irradiation seems to have been responsible for malignant extension of the infection in some of the patients considered here. Conservative and gentle local care of such lesions is recommended. Surgical attack on the orbit, carotid artery, temporal bone, accessory air cavities or intracranial structures should not be undertaken without most careful consideration of the risks involved. In general the surgeon with most mature experience in this field will be most conservative.

(MacNeal, W.J.: Frisbee, Frances C., and Blevins, Ann: Archives Ophthalmology, March 1943.)

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SHOCK FOLLOWING SEVERE HEMORRHAGE:

Whether or not severe hemorrhage can lead to true shock is still controversial. In this study, 26 healthy, adult unanesthetized dogs were used. The experiments were divided into two main groups: undehydrated and dehydrated animals. Typical shock was produced by graded hemorrhage in 11 non-dehyrated and in 15 dehydrated dogs. In 2 of the non-dehydrated and in 8 of the dehydrated animals concentration of blood occurred. Plasma volume and plasma protein determinations, before and after hemorrhage, revealed that the animals with blood concentration actually lost additional plasma fluid and protein as shock developed. Pathologic changes consisting of gastrointestinal engorgement and hemorrhage, pulmonary congestion and engorgement, and occasional changes in other viscera were observed in a number of animals. The hemodiluting, non-dehydrated animals tolerated an average total blood loss of 49 percent as compared to an average total blood loss of 43 percent tolerated by the other animals. The changes in plasma protein concentration after hemorrhage indicated that the hemoconcentrating dehydrated animals hemodiluted during and after hemorrhage to a lesser degree then the other 3 groups. This relative inability to hemodilute could explain their inability to tolerate as much bleeding before going into shock and could lessen the masking by earlier hemodilution of the subsequent hemoconcentration as shock develops. The authors suggest that the conflicting reports as to the occurrence of hemoconcentration after hemorrhage may be related to the state of hydration of the animals studied. They conclude that there are no definite grounds for differentiating between hemorrhagic shock and shock from other causes.

(Weston, R.E.; Janota, Martha; Levinson, S.O., and Necheles, H.: American Journal of Physiology, February 1943.)

* * *

SURGICAL TREATMENT OF PATENT DUCTUS ARTERIOSUS WITH BACTERIAL ENDARTERITIS:

As pointed out in this report, subacute streptococcus viridans endarteritis may involve a patent ductus arteriosus at any age. Under conservative therapy, the disease has proved to be almost invariably fatal. In the early stages of infection, vegetations are likely to remain confined to the ductus and pulmonary artery. In the latter stages of infection, or even in the early stages of severe infection, vegetations may spread to the cardiac valves or into the aorta. Aortic spread seems to occur chiefly in cases in which the ductus is short. Eleven patients who had patency of the ductus arteriosus complicated by subacute streptococcus viridans endarteritis were subjected to operation consisting of ligation (9 cases) or division (2 cases) of the ductus. Nine patients survived the operation; two died of operative hemorrhage. Of the nine survivors, six recovered from infection without benefit of chemotherapy. The remaining three patients did not recover from infection, despite chemotherapy. Of the six patients who recovered, none presented evidence of preoperative spread of vegetations to the cardiac valves or aorta. They have been followed for periods of three to twenty-nine months; all are well and have had repeatedly negative blood cultures. Of the three patients who failed to recover from the infection, two presented evidence of vegetative valvular lesions prior to operation. The third was assumed to have vegetations at the aortic end of the ductus. One died of subacute streptococcus viridans endarteritis approximately eight months after operation. The other two are unimproved fourteen and sixteen weeks, respectively, after operation. It is concluded that ligation or division of the ductus, if performed before vegetations have spread to the cardiac valves or aorta, is an effective and safe method of treating subacute streptococcus viridans endarteritis involving a patent duc-

tus arteriosus.

(Touroff, A.S.: American Heart Journal, February 1943)

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MEDIASTINAL PLEURISY IN INFANTS:

This represents a study on the roentgenologic aspects of pleurisy in the anterior superior mediastinal area of infants. The shadows given by this condition are similar to but differing from the thymus gland in many respects. From the 8 cases discussed in this paper, it was concluded that atypical appearing thymus gland should be reappraised with mediastinal pleurisy foremost in the differential considerations. Mediastinal pleurisy is found in 1 to 2 percent of routine roentgen chest examinations in children under one year of age. Infants having prolonged, atypical or repeated pneumonic symptoms should be examined for the existence of mediastinal pleurisy. Pleurisy of this form was associated with pneumococcic infections of the lungs in 4 cases in this series and with suspected lipoid pneumonitis in 2 cases. Frequent recurrences of pneumonic infection were noted. Treatment of the cases reported was symptomatic except for specific therapy of the initial or recurrent pneumonic processes. Diagnostic or therapeutic aspiration for any fluid present was not attempted in this series. Roentgen therapy directed to the mediastinal area in 2 cases did not shorten the course of the process. Residual linear pleural thickening in the central interlobar fissure region was noted after clearing of the pleurisy, and it appeared as a solid triangle when poor alignment occurred in roentgenography.

(Harvey, R.A.: American Journal Roentgenology, February 1943)

* * *

WHAT U.S. DOCTORS ARE TALKING ABOUT:

The $1000 award given each year by Mead Johnson and Company for research on the B complex vitamins was given this year to Professor Vincent du Vigneaud and his associates of Cornell University Medical School for their work on the structure of biotin. The chemical structural formula of biotin was announced last year by Professor du Vigneaud and synthesis of the vitamin is expected to follow shortly.

Experiments have shown that vitamin A saves the lives of animals infected with whooping cough. Rats deficient in vitamin A have little chance of survival when inoculated with whooping cough germs, while those receiving adequate amounts of the vitamin recover from the disease.

Three new developments have been named by surgeons at Walter Reed General Hospital in Washington, D.C., as the greatest advances in plastic surgery since the last war. A new method of cutting skin for grafting to replace scars, general improvements in technique, and the continuous wire loop with elastic traction for pulling blasted jaws back into normal position mean that there will be far fewer disfigured veterans after this war. The latest thing in casts for jaw injuries which is being used at Walter Reed Hospital is an acrylic bandage which fits about the head. The elastic bands for pulling the damaged jaws back into normal biting and chewing position are attached to this. Made of material that looks and feels like strong, fine quality white silk, it hardens

to a stiff, strong bandage when liquid is poured over it.

A vaccine against tooth decay is being tested at the U.S. Army Medical Center. The vaccine is made from lactobacilli and both living and dead germs and a combination of the two are being tried in the hope of building up resistance to the germs. At the Army Dental School, chrome cobalt and a new material, methal-methacalat are being used as substitutes respectively for gold and for vulcanized rubber in making soldier's false teeth. The new metal alloy, which does not tarnish in the mouth and resists strain, is used for plates for false teeth.

Pyrethrum, effective ingredient of sprays used to eradicate mosquitoes and other insects, has now been put into an ointment for delousing purposes. It is said to be highly effective in eradicating both the lice and their eggs without causing any skin trouble to the user or staining clothing permanently. It need only stay on the body for 15 minutes and can then easily be washed off with soap and water. Since body lice transmit European typhus fever, the new ointment is believed to be of importance as a possible aid in the fight against this disease as well as in fighting less harmful infestation.

At the American Chemical Convention at Detroit, Michigan, it was reported that special drugs have been prepared which hold out new hope of the conquest of tuberculosis and leprosy. Drugs belonging to the aromatic iodine compounds have been tested and appear to check the growth of tuberculosis germs. A new line of drugs is now being tested against rat leprosy. The chemists announced that they have also made new antimalarial drugs. The use of vasosulfa, a new sulfa compound for the relief of nose and sinus inflammation was also reported. It was said that vasosulfa might be especially useful for aviators.

The Army doctors at Walter Reed Hospital in Washington, D.C., are working miracles in restoring to health the casualties brought back from the front by airplane. One patient with a complicated abdominal wound was brought to the hospital from Egypt in 72 hours. Others have been flown from India, Cairo, Europe, Africa and the Far East in a very short period of time.

* * *

MOSQUITO VECTORS AND INAPPARENT ANIMAL RESERVOIRS OF ENCEPHALITIS VIRUS:

This report presents field and laboratory investigations which furnish data leading to the hypothesis that at least in one epidemic area both Saint Louis and western equine encephalitis were mosquito-borne and that the source of mosquito infection was a huge inapparent reservoir among vertebrates, particularly domestic fowl. Since both viruses had been found in naturally infected Culex tarsalis, this species of mosquito was tested in the laboratory for its ability to acquire infection from fowl, and in turn to transmit it. This reproduction in the laboratory of the suspected natural cycle was effected for both viruses. It appears, therefore, that both types of encepha-

litis are mosquito-borne and that there probably exists an inapparent animal reservoir. However, other mosquitoes representing three genera and other arthropods are capable of transmitting the infection in the laboratory. In some areas these might serve as vectors, and in this case other vertebrate hosts might be involved as reservoirs. Control apparently should be directed primarily at the arthropod vectors, with human vaccination employed under special circumstances.

(Hammon, W. McD., Reeves, W.C. and Gray, M.: American Journal of Public Health, March 1943.)

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THE EFFECT OF EXTERNAL TEMPERATURE ON SHOCK:

Shock is a type of peripheral circulatory failure which causes a profound disturbance in the physiologic mechanism of the body and leads to a syndrome exhibiting among its manifestations hemoconcentration, oligemia and a generalized peripheral vasoconstriction. This study is devised to determine experimentally the importance of temperature on shock as well as the effect of heat on the survival time of shocked animals. The effects of various external temperatures in contact with control and experimentally shocked animals (rats, guinea pigs, rabbits and dogs) were investigated. Cold and heat both proved to be deleterious to the life of animals in shock. An external temperature in the neighborhood of that of the mammalian body seems to be optimal for the survival of shocked animals. These findings justify the conclusion that as long as whatever is lost, whether it is plasma or whole blood, is not replaced, heating or chilling shocked animals is harmful, while keeping them comfortably warm contributes favorably toward their survival.

(Wakim, K.G., and Gatch, W.D.: Journal American Medical Association, March 20, 1943.)

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THE THYMUS AND MYASTHENIA GRAVIS:

The general character of myasthenia gravis suggests an endocrine disorder. X-ray evidence of thymic enlargement or tumor is rare in myasthenia gravis although necropsy experience leads to anticipation of abnormality of this gland in about half of the cases. X-ray therapy directed to the thymus has yielded inconclusive results although some patients appear to have been benefited. In this study, tabulation was made of 13 cases of myasthenia gravis in which operation had been performed for removal of the thymus or of a thymic tumor. All of the patients who survived operation appeared to show some improvement, in a few instances amounting to cure. Complete disappearance of myasthenic symptoms, however, did not result in all cases despite apparently complete thymectomy. An attempt was made to demonstrate a curare-like substance in the blood and urine of myasthenic patients and in extracts of thymic tumors removed at operation or autopsy, but such substance could not be demonstrated. It was concluded that further search should be made for such a substance and that further thymectomies should be carried out in certain carefully selected cases.

(McEachern, Donald: Medicine, February 1943.)

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MEDICAL LETTER FOR DOCTORS, DRUGGISTS, SCIENTISTS

The war has disrupted the world-wide exchange of information on progress in all fields of science. Research does continue, however, and to keep you informed of work done in the medical field of the United States, this communication has been prepared by the American Medical Association.

* * *

HEALTH OF LEAD-EXPOSED STORAGE BATTERY WORKERS:

Before the present war the incidence of severe forms of lead intoxication among employees in the lead storage battery industry was decreasing. The purpose of this report is to review briefly the environmental results and to present certain clinical findings of the last extensive investigation of health hazards in the storage battery industry made by the U.S. Public Health Service, and to call attention to the implication of some of the results.

On medical study of 766 storage battery workers, 177 were found to be affected with what is designated as "early plumbism" - 168 were cases of abnormal lead absorption and 9 were diagnosed as incipient plumbism. The percentage of workers with early plumbism increased with increase in the atmospheric lead concentration. Only 4 percent of the men exposed to less than 0.75 mg. of lead per 10 cubic meters of air showed signs of abnormal absorption, whereas 54 percent of the workers exposed to more than 3 mg. of lead per 10 cubic meters were diagnosed as cases of early plumbism. There were, however, no important time trends Both blood lead and urinary lead values were higher on the average in the lead-affected workers. These values also increased on the average with increasing atmospheric lead exposure. On the basis of data presented, it appears that the more the blood lead or urinary lead values of an individual deviate from the range of values of unexposed people, the greater is the likelihood that such an individual will be found to have other evidence of lead-induced bodily changes. Reticulocyte, stipple cell, and polychromatophilia values correlated generally with atmospheric lead concentrations and blood and urinary lead values. It would appear, therefore, that these hematologic determinations are of value as a convenient method for the periodic appraisal of employees having hazardous exposures. The prevalence of albuminuria among the lead-affected group was twice as great as among non-affected workers. The prevalence of arterial hypertension and arteriosclerotic-hypertensive heart disease among these employees was not significantly different from that observed in other industrial workers.

Wide ranges of lead exposure were found in the workrooms of storage battery manufacturing plants. The greatest atmospheric lead contamination occurred in pasting, oxide mixing, plate drying, plate finishing, plate repair, smelting, and group assembly operations. Actual exposure of workmen is variable and may be reduced by various engineering practices such as enclosure, good housekeeping, wet methods, local exhaust, improved general ventilation, and the use of personal respiratory devices. The periodic inspection of employees by the physician or by his assistant is essential for detecting cases of early lead poisoning and for calling attention to deficient environmental control measures, and can be of material assistance in instructing the employee in various hygienic practices such as washing the hands before eating and the proper wearing of respirators.

Every effort should be made to maintain and advance the gains made in the control of the lead hazard during the past 20 years in this industry in order to keep the workers "full time on the job." This end may be accomplished by directing particular attention to operations affording a high exposure to lead, and is attainable by means of a carefully coordinated program which includes the management, employee, doctor, and engineer.

(Dreessen, W.C.: The Journal of Industrial Hygiene and Toxicology, February 1943)

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SULFATHIAZOLE THERAPY OF FIVE HUNDPED PROSTITUTES WITH CHRONIC GONORRHEA:

Medical history shows that there is a great increase of venereal disease during wartime. Prostitutes are a danger to military and industrial armies. Detailed histories of some of the cases reveal twenty to thirty exposures during a twenty-four hour period. In a metropolitan city like New York with huge naval, military and industrial developments, a center for the armed forces on leave or embarkation, this problem assumes such serious significance that it requires immediate and proper attention. A study of 615 hospitalized gonorrheal patients shows that 60 grains of sulfathiazole daily for one week gives a 95 percent apparent cure rate. The administration of sulfathiazole or sulfapyridine to the failures increases this rate to 98.9 percent. This high cure rate must be carefully scrutinized in order to determine the permanence of immediate results. It must be determined whether the criteria of cure employed are sufficient to insure protection of the public against further infection. The difficulty in detecting the asymptomatic carrier cannot be emphasized too strongly. Health departments defeat their own purpose by hospitalizing patients to control infection and then releasing them before cure in the custody of a private physician, because of an interpretation based on the present law. The authors feel that a prostitute, although treated, remains potentially infectious for approximately three months, during which time, if at large, she is a source of infection and as such forfeits her right to the benefit of doubt. The cure of an infected prostitute requires adequate compulsory hospitalization. If the law now does not adequately remove this public health hazard, as it does in most contagion, remedial statutes should at once be enacted toward that end.

(Strauss, H. and Grunstein, I.: The Journal of the American Medical Association, April, 1943.)

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RHEUMATOID ARTHRITIS AS A CAUSE OF INCREASED CEREBROSPINAL FLUID PROTEIN:

The neurologic manifestations of rheumatoid arthritis are numerous, variable, and at times simulate the disease of the central or peripheral nervous system. In an attempt to elucidate this subject, Ludwig and his colleagues examined the cerebrospinal fluids from 101 patients with rheumatoid arthritis, 42 having spondylitis with or without peripheral arthritis and 59 having involvement of the peripheral joints alone. The only significant abnormalities observed were increased protein contents, abnormal colloidal gold curves or a combination of the two. Nine, or 12 percent, of the 59 patients with rheumatoid arthritis

involving the peripheral joints alone and 16, or 38 percent, of the 42 patients with spondylitis exhibited such abnormalities. Fifteen of the 16 patients with increased cerebrospinal fluid protein had either spondylitis or symptoms suggesting spinal involvement. This fact points strongly to a relation between an elevation of the spinal fluid protein and the presence of rheumatoid arthritis in the spinal and sacroiliac articulations. Cerebrospinal fluid alterations occurred more frequently in the spondylitis patients with severe pain or sciatica or both and hence presumably with a higher degree of inflammatory activity. Factors probably involved in the production of these abnormalities are alterations in the serum proteins and increased permeability of the meninges from their proximity to inflamed articular tissue. Attention is called to the diagnostic difficulties presented by patients with rheumatoid spondylitis and increased cerebrospinal fluid protein, with particular reference to their differentiation from cases with ruptured intervertebral disks.

(Ludwig, A.O.; Short, C.L., and Bauer, W.: New England Journal of Medicine, March 1943.)

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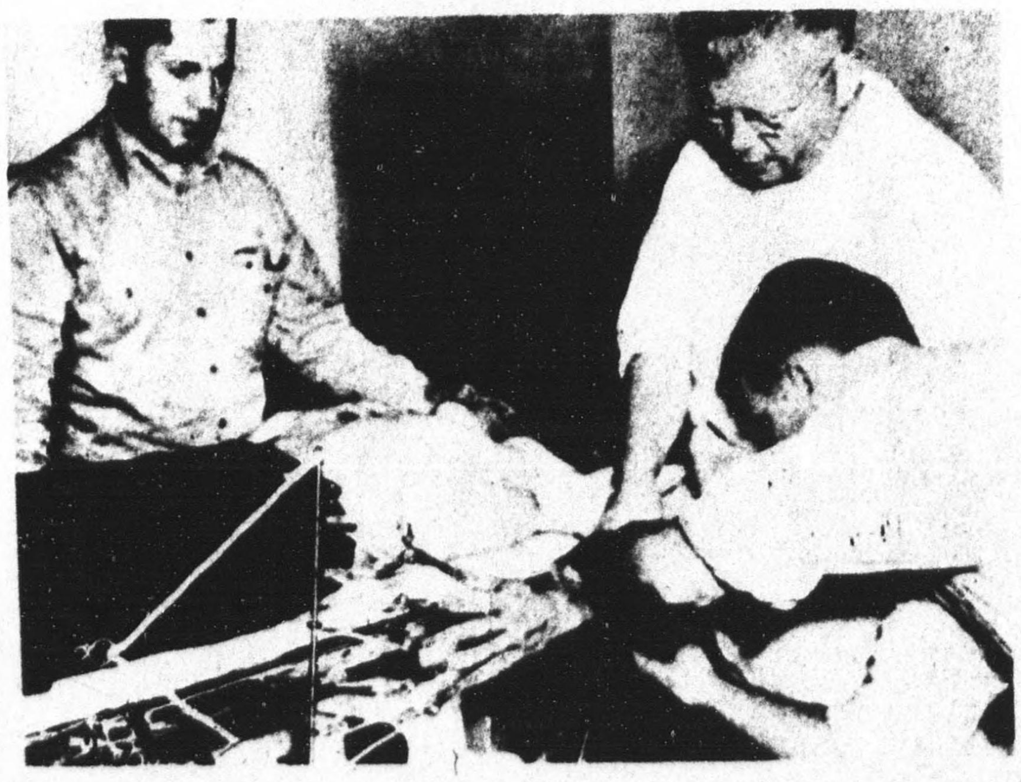
WHAT U.S. DOCTORS ARE TALKING ABOUT:



This is a new traction apparatus for producing a steady pull on a fractured forearm, to speed and simplify the setting process. The equipment was designed by technicians aboard a U.S. battleship. Pull on the fingers is exerted by a set of woven finger traps. The fingers slip in easily but are held fast if there is the slightest pull.

At a meeting of the Medical Society of the State of New York, it was announced that gas gangrene can now be successfully treated with X-rays. Diphtheria and actinomycosis also were reported to respond to X-ray treatment.

A model Brazilian maternity center will result from a fellowship award made by the American Association of University Women. A Brazilian woman physician,

Dr. Yvonne Parigot de Souza, after studying American methods of handling maternity and child welfare cases, will set up a model maternity center in Brazil.

Success in the first trials of a new method for treating goiter by medicines instead of by surgical operation was reported by a physician at the Harvard Medical School. Thiourea and thiouracil, he believes, not only inhibit the function of the thyroid gland, but also prevent the production of its hormone. Further studies are needed to determine the best and safest methods of using these drugs for long-term treatment.

A method for storing fragments of nerves indefinitely for future use as grafts was reported recently. The nerves are frozen at 150 degrees below zero Centigrade, dehydrated in a high vacuum, sealed in, and stored in the dry condition. They are rehydrated before use. "This treatment leaves the histological, biophysical, and biochemical properties of the nerve essentially unharmed. When grafted, such nerves are readily and fully pervaded by regenerating nerve fibers, much as if they were living." It was also pointed out that sleeves of fresh or frozen-dried arteries are another aid to the neurosurgeon. With their aid, nerve stumps can be spliced without being sewed together and "practically ideal nerve regeneration has been obtained."

A device that folds surgical dressings three to five times faster than by hand is now in mass production in the United States. It has a composition-board base with hinged flaps which are folded over with the gauze in a set sequence to produce measured creases. Fingers touch the fabric only when corners are mitered. The device is so simple that school children can use it.

A new aid to protect the hearing of workers in noisy industries, such as shipbuilding, and which promises to be the solution for certain industrial ear problems, was recently developed. It consists of an ear mold of transparent plastic lucite, made to fit each worker's ear, which reduces the intense and high-frequency noises, but permits the wearer to hear conversation without trouble. Workers report it comfortable and satisfactory, shutting out distracting, painful, and deafening noises.

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RADIUM THERAPY IN BENIGN UTERINE BLEEDING:

This study is based on 350 cases, observed over a fourteen year period, which sought medical advice because they suffered from vaginal bleeding and associated symptoms. In 285 patients the bleeding was accompanied by fibroids and in 65 no fibroids were present. The uterine bleeding, it was concluded, can be cured by curettage and intrauterine insertion of radium in properly selected cases. The average dose required to induce artificial menopause is 1,800 mc. hr. A small dose of radium is preferable to a concentrated dose. Complete

involution of the tumor took place in 81.4 percent, partial involution in 16.8 percent; not affected by the radium, 5 patients. It is not advisable to use radium in patients who suffer from essential hypertension and who have no other contraindication for operation. Radium is contraindicated in cases in which the uterus is enlarged to more than fourteen weeks' pregnancy. It should not be used when a submucous fibroid is suspected, nor is its use advisable in subperitoneal or broad ligament fibroids. It is dangerous to use radium in patients who give a history of having had a pelvic infection. The menopausal syndrome is not accentuated by radium. The leucorrheal discharge is increased for a period of six to seven weeks in a goodly number of cases. Sexual relationship is less likely to be disturbed following the use of radium. The libido is definitely not affected. Curettage and intrauterine radiation can be safely utilized in at least 35 percent of patients suffering from uterine bleeding. It should replace abdominal hysterectomy in 25 percent of cases and vaginal hysterectomy in 40 percent.

(Rongy, A.J. and Seley, A.D.: American Journal Obstetrics and Gynecology, March, 1943.)

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PROGNOSTIC SIGNIFICANCE OF THE NUMBER OF PNEUMOCOCCI IN SPUTUM IN PNEUMOCOCCIC PNEUMONIA:

The average number of pneumococci per oil immersion field in Wright-stained smears of rusty sputum was determined at twelve hour intervals in 678 cases of pneumococcic pneumonia, exclusive of type III. The close relationship between the highest sputum count during the course of the disease and the outcome was shown by the fact that the fatality rate was 2 percent when the pneumococci did not exceed 10 per field, 9 percent when 11 to 30 were present, 30 percent when 31 to 75 organisms were found, and 77 percent when the number exceeded 75. The fatality rate was uniformly low in patients with less than 30 pneumococci per field and uniformly high in those with sputum counts above 30, regardless of the type of pneumococcus, duration of the disease prior to therapy, leukocyte count, and blood culture. The unfavorable prognosis usually attributed to type, bacteremia, leukopenia, and late penumonia was due chiefly to the higher incidence of sputum counts over 30 per field in such cases. On the other hand, a comparison of cases whose sputum counts fell within the same range showed that age and extent of consolidation had a definite effect upon the outcome since the fatality rate was significantly higher in patients over 54 or in those with consolidation of two or more lobes on admission to the hospital. It was therefore concluded that the number of pneumococci in the sputum had the greatest influence on prognosis and that the most important accessory factors were the extent of involvement and the age of the patient. It was also found that modern chemotherapeutic agents did not appreciably reduce the fatality rate in cases with sputum counts below 30 but were distinctly superior to sulfanilamide and serum in cases with counts above 30. The combination of serum and drugs appeared to be no more effective in the latter group than chemotherapy alone.

(Frisch, A.W., Price, A.E., and Myers, G.B.: Journal Clinical Investigation, March 1943.)

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ABSORPTION, EXCRETION, AND TOXICITY OF PENICILLIN ADMINISTERED BY INTRATHECAL INJECTION:

These investigators present data concerning the blood and spinal fluid concentration and the urinary excretion of penicillin after the intrathecal injection of 3,000 to 10,000 Florey units in normal subjects and patients with meningitis. In normal subjects, penicillin was slowly absorbed and slowly excreted in the urine following the injection of 5,000 or 10,000 Florey units. It was detected in the spinal fluid for 31.5 hours after the injection of 10,000 Florey units. In subjects with meningitis, absorption of penicillin after intrathecal injection was more rapid than in normal individuals. Likewise, a greater amount of the administered dose was excreted in the urine. Penicillin was detected in the spinal fluid 24 hours after the injection of the antibiotic agent. In two subjects who died, penicillin was demonstrated in the cerebrospinal fluid removed from the third ventricle and from the cisterna magna. In a normal subject the injection of 10,000 Florey units was followed by headache, vomiting, increased intrathecal pressure and phagocytosis in the spinal fluid. After the injection of 5,000 Florey units no symptoms were noted other than a slight headache and a slight increase in the number of leukocytes in the spinal fluid. In the subjects with meningitis no untoward symptoms were noted following the injection of 3,000 to 10,000 Florey units.

(Rammelkamp, C.H., and Keefer, C.S.: American Journal Medical Science, March, 1943.)

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PROPHYLACTIC USE OF SULFANYLGUANIDINE IN DYSENTERY:

An outbreak of bacillary dysentery occurred in a group of 118 hospital ward patients. Forty-five patients intimately exposed to the disease were given a prophylactic course of sulfanylguanidine. None of these patients developed dysentery. Forty-eight patients were less intimately exposed and not given a prophylactic course of sulfanylguanidine. Four of these patients developed dysentery. Twenty-nine children who developed bacillary dysentery recovered promptly when treated with sulfanylguanidine. Toxic reactions to the drug were negligible. The prophylactic use of sulfanylguanidine to replace general public health measures such as medical asepsis, the physical examination of employees and education of food-handlers is not advocated. The use of sulfanylguanidine, however, is immediately suggested in epidemic diarrhea of the newborn infant although whether the drug will prove equally effective in the most severe forms of dysentery than they reported is yet unknown.

(Lucchesi, P.F., and Gildersleeve, N.: Journal of Pediatrics, March 1943.)

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BLOOD FLOW IN EXTREMITIES AFFECTED BY POLIOMYELITIS:

It has been generally accepted that an extremity affected by anterior poliomyelitis with atrophy of voluntary muscle suffers from a diminution in blood supply. Indeed the rationale for some of the methods of treatment of this condition has been based on an attempt to increase the peripheral circulation

through the involved muscles. Definite proof of this assumption however appears to have been lacking.

Now Abramson and his colleagues measure the rate of blood flow during rest by the venous occlusion plethysmographic method in a series of 27 subjects with acute or chronic anterior poliomyelitis of one extremity. It was found that in the majority of cases the peripheral circulation in the paralyzed limb was the same as that in the contralateral normal extremity; in fact, in some instances it was even significantly greater. Evidence was obtained which indicated that the cutaneous blood vessels in the extremity affected by anterior poliomyelitis respond more markedly to the stimulus of cold than do those of the contralateral normal limb. The response takes the form of excessive vasoconstriction on exposure to a low environmental temperature and is apparent as a significant decrease in cutaneous temperature. By studying the changes in blood flow during the reactive hyperemia elicited by a period of arterial occlusion, some evidence was obtained which suggested that the metabolism of muscles atrophied by poliomyelitis is the same as that of normal tissues. In view of the lack of evidence for the hypothesis that in persons with anterior poliomyelitis the peripheral circulation is reduced, it is concluded that those treatments which have for an aim the increase in blood flow through the affected parts should be critically reexamined for their therapeutic value.

(Abramson, D.I., Flachs, K., Freiberg, J., and Mirsky, I.A.: Archives of Internal Medicine, March, 1943.)

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NATURE OF RENAL LESION FROM SULFONAMIDES AND ITS PREVENTION WITH UREA:

These observations were made on 48 adult white male rats divided into four groups of twelve. Groups one and two were each given 1 mg. of sodium acetylsulfapyridine per gram of body weight, but in addition group two received 5 mg. of urea per gram of body weight. Groups 3 and 4 received 3 mg. of sodium acetylsulfapyridine per gram of body weight and group 4 received in addition 10 mg. of urea per gram of body weight. Untreated rats of the same age were used as controls. The results of examinations of tissue sections showed that intrarenal foreign material following the sulfonamide drug therapy is of two types: (1) precipitated sulfonamide and its acetylated products; (2) cellular débris, with calcium and iron deposition around or on this material. It was found that urea simultaneously administered with sodium acetylsulfapyridine will prevent the precipitation of sulfonamides and the formation of renal calculi in rats. The action of urea is independent of a diuretic effect and depends upon a specific solvent effect on acetylsulfapyridine. The nephrotoxic properties of acetylsulfapyridine are mechanical in nature and result from precipitation of the drug in the renal tract. Calcification in the kidney and the resultant calculus formation in sulfonamide treated animals is dependent upon local tissue damage and the secondary deposition of calcium and iron on focal, nonviable structures.

(Sobin, S.S., Aronberg, L.M., and Rolnick, H.C.: American Journal of Pathology, March 1943.)

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EFFECT OF MODERATE ANOXIA ON EXCRETION OF ASCORBIC ACID IN THE URINE:

It has been previously observed that when male subjects are exposed in an altitude chamber to an altitude of 18,000 feet, without benefit of oxygen inhalation, for from one-half to one hour, the urine frequently becomes alkaline. On testing the urine the existence of ketonuria was indicated in numerous instances, these observations being interpreted as due to hyperventilation. Further investigation of this subject in human beings and guinea pigs exposed at an altitude of 18,000 feet for one hour every second or third day revealed definite disturbance in the metabolism of vitamin C. Immediate effect of exposure appears to be retention of the vitamin. Repeated exposures appear to affect its utilization or synthesis. These results which are exploratory in nature raise still further questions as to significance of the phenomenon and the desirability of possible counter measures.

(Krasno, L.E., Ivy, A.C., Atkinson, A.J., and Johnson, W.B.: War Medicine, March 1943.)

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TREATMENT OF VICTIMS OF POISON GAS:

In case of mass casualties from asphyxiant gas poisoning the bronchoscope should have a prominent place in the plans and preparations for meeting such an emergency. Otolaryngologists, Mitchell believes, have a grave responsibility in the management of gas casualties because the most prominent symptoms of all types of gas poisoning are related to the upper and lower respiratory tract.

(Mitchell, H.E.: Archives Otolaryngology, March 1943.)

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