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Diagnosis of Hysterical Paralysis

Ralph E. Worden MD, Ernest W. Johnson MD, and Richard D. Burk MD, Department of Physical Medicine and Rehabilitation, University of California School of Medicine, Los Angeles, Calif. Arch Phys Med 42: 122-123, February 1961.

Hysteria was originally thought to be a group of symptoms present only in females as a result of a wandering uterus. Later, Babinski revised the teachings of Charcot whose original description of hysterical paralysis remains classic.

The purpose of this paper is to emphasize clinical signs which aid in recognition of hysterical weakness. No attempt is made to differentiate weakness resulting from conscious versus unconscious causes. Both types show strikingly similar findings and the pattern of weakness may appear in both in any form or degree.

It is common practice to make the diagnosis of psychogenic weakness by excluding all possible organic causes. There are five signs which we believe are characteristic of hysterical weakness; these signs permit a positive approach to the diagnosis.

Cogwheel Response. The cogwheel or ratchet response is seen on manual muscle test and is almost pathognomonic of hysterical weakness. The opposite response is seen in patients with weakness due to neuromuscular pathology because they exert maximum effort throughout the test; thus, the weak muscles in effect "give way" smoothly. A technic to reinforce the cogwheel response is to repeat the test, increasing the force suddenly, whereupon the patient holds forcibly a second or so then gives way.

Inconsistencies. When testing "weak" elbow flexors, the patient may resist 5 to 10 pounds of force for a few seconds and then give way. When repeating the test with considerably less force, the hysterical patient gives way with equal ease. Repeating the test several times with the same force will result in different responses by the patient.

Muscles which are apparently flaccid may suddenly contract when the patient performs functional acts. For example: crawling backwards stimulates contraction of the hamstrings; coughing stimulates the latissimus dorsi; painful stimulus may cause a paralyzed limb to withdraw; et cetera.

Although less specific, other inconsistencies include weakness beyond all expectations in the absence of atrophy or reflex changes when, with the patient recumbent he is asked to raise the "paretic" lower extremity, there is no pressure under the sound heel; and when he is asked to raise the sound leg there is associated heel pressure on the "paretic" heel.

Bizarre Gait. The gait is bizarre when the lower extremities are involved. A knowledge of functional anatomy and pathologic gaits facilitates its recognition. The hysterical patient may simulate any one or more of the specific gait patterns of true pathology, but bizarreness suggests the hysterical component.

Slowness of Motion. During examination the patient performs many activities in a slow and laborious manner as in "slow motion." Actually, many of the functional tests (e. g., squat and rise) require considerably more strength when done slowly.

Overflow of Activity. The hysterical patient frequently performs simple acts with an overflow of activity into unrelated areas. Frequently, the trunk will wobble and the arms elevate and wave while the patient is walking on his heels or toes. Overflow of activity also may be present during the manual muscle test.

The presence of any of the described signs should alert the physician to the possibility of hysterical weakness. Although it is possible for minimal organic pathology to be present, this should not prevent recognition of the hysterical component which may be the major disabling condition. Motor unit disease or injury, probably most often confused with hysterical weakness, can be identified and localized with electromyographic and nerve muscle stimulation studies.

* * * * *

Acute Gastric Dilatation

John J. Byrne MD and John M. Cahill MD, Boston University School of Medicine, Boston, Mass. Amer J Surg 101:301-309, March 1961.

Acute gastric dilatation, first recognized by Duplay in 1833, was explained on a pathologic basis by Rokitansky in 1842, and on a clinical basis by Fagge in 1873. Since these classic studies, a host of other investigators have concerned themselves with all phases of the condition. Although not as lethal as the 63.5% mortality rate reported by Laffer in 1908, it still can challenge the diagnostician and be an occasional cause of death.

Seventeen fatal cases of acute gastric dilatation were found in the autopsy files of the Boston City Hospital in the period 1935 - 1959. Because the autopsy rate over this period was about 30%, it is probably safe to assume that three times this number actually died of the disease.

The cardinal features of this syndrome are varying degrees of abdominal distention, regurgitant vomiting of small amounts of gastric contents, respiratory embarrassment, and vascular collapse. Secondary signs are cyanosis, increased sweating, coldness, abdominal discomfort, hiccoughs, or scanty urine.

Two basic conditions are necessary for acute gastric dilatation to develop; a source for distending gas or fluid, and some obstructive factor which limits the material to the stomach and duodenum. The distention may be due to an enormous quantity of fluid and gas averaging between 2 and 3 L of fluid; an estimated volume of 8000 ml was reported in one instance. Distention may develop quickly, even occurring in less than 15 minutes. Although some observers have believed the distending material to be primarily fluid due to

gastrorrhoea, the consensus is that the primary agent is a gaseous distention with the fluid component secondary to the effect of distention. The fluid may leak from disturbed capillaries and/or as proposed by Dragstedt, "the gastric and pancreatic juice cannot be resorbed due to the disturbed circulation in the distended viscus."

The gas may be due to gastric liberation from some food or medicine; high carbohydrate vegetables have been implicated. In most cases the air is either swallowed or sucked through the esophagus into the stomach. Negative intrathoracic pressure can suck air down the esophagus if there is relaxation of the superior esophageal sphincter. If there is dyspnea or other respiratory difficulty, the negative intrathoracic pressure may become a more influential factor.

The superior esophageal sphincter, a circular striated muscular ring in the upper esophagus, ordinarily prevents atmospheric air from entering the esophagus. Relaxation of this sphincter may be due to muscular weakness caused by debility or disease, deformation by a tube passing through or near it, a nervous reflex mediated by stimulation of the subdiaphragmatic vagus, or acquired through practice of esophageal speech after laryngectomy. Tube deformation is of special interest because the nasal catheter is often used for administering oxygen for dyspnea. One report indicates 7 cases of acute dilatation with 6 deaths occurring in relation to use of nasal oxygen.

Localization of fluid and gas to the stomach and often to the first and second portions of the duodenum has been thought to be purely anatomic obstruction of the duodenum where it passes over the spine and is compressed by the superior mesenteric vessels or the mesentery itself. Emaciation from debilitating diseases, relaxation during the immediate postpartum period, or pelvic adhesions could pull the small intestine into the true pelvis and accentuate compression by the mesenteric vessels. Emaciation and cachexia may play another part, however, such as the incidental hypoproteinemia with its associated tendency to paralytic ileus or its effect on diminishing blood volume making such individuals more prone to hypotension. In other instances, cachexia has been an indicator of severe cardiac or pulmonic disease and has made its victims easy prey for conditions imposing a strain on the cardiovascular system.

The dilated stomach can reinforce obstruction by pushing the intestines further into the pelvis or by direct compression on the duodenum as it passes over the vertebral column. Obviously, patients with lordosis would be more subject to such obstruction. Thus, this may relate to the so-called "cast syndrome" in which the localizing factor appears to be distortion of the spine due to the molding of a plaster cast. One stumbling block in the primary obstruction theory is the inability to decompress the distended viscus by vomiting.

A more logical concept for localization of gas and fluid to the stomach is a disturbed nervous reflex producing a "paralytic ileus" confined to the stomach. It must play an important role because it is obvious that there could be no gastric distention if normal vomiting occurred. However, it is more than a purely local affair and may embrace the entire vomiting reflex circuit. There

are many disease states associated with paralytic ileus, the more important of which are infection, trauma, irritating fluids in the peritoneal cavity, metabolic defects, and spinal cord disease.

Recent studies have emphasized the metabolic effects of electrolyte deficiencies as a chief factor in the gastric atony. Some observers have found evidence of adrenocorticoid hyperactivity with abnormal prolongation of post-operative eosinopenia, excessive potassium loss in the urine, and retention of water, sodium, and chloride which reverted to normal on recovery.

Regardless of the cause there are many deleterious effects of prolonged gastric distention which may produce a high mortality if not relieved rapidly. Reflex hemodynamic changes may occur, mediated via the vagus nerve and resulting in a drop in blood pressure and bradycardia. In the healthy subject such effects are transient. Mechanical circulatory effects may be due to compression of the vena cava and aorta depending upon the severity of distention.

The general trend is a drop in blood pressure of varying degrees at various times. In experimental animals, cardiac output has shown a progressive drop during the course of distention with reversal to normal after deflation of the stomach. This would seem to indicate that a large portion of the circulating blood is sequestered somewhere in the vascular compartment, in the portal and/or inferior vena caval beds.

Detailed studies in animals of respiratory rate, tidal volume, et cetera have revealed marked encroachment and impedence of the physical act of respiration. It is conceivable that prolonged gastric dilatation could result in loss of hydrogen ions and alkalosis with a low serum potassium. However, these changes have not been observed in animals. In general, it would seem that hypochloremia and alkalosis seen under these circumstances are the cause of the predisposition to paralytic ileus and not an effect of gastric dilatation.

To summarize, it would appear that there are mechanical problems in hemodynamics and respiration which eventually produce profound physiologic and biochemical changes extremely detrimental to the organism.

* * * * *

Current Management of Ascites

M. Judson Mackby MD, Surgical Service, Kaiser Foundation Hospital, San Francisco, Calif. J Int Coll Surg 25:423-435, April 1961.

The first surgical procedure deliberately performed in the hope of alleviating ascites was an omentopexy by van Moulen in 1889. Since that time a multitude of extremely ingenious (and often unphysiologic) operations designed for relief of ascites have been developed. It is highly likely that all these procedures have done more harm than good and should never be utilized in the management of ascites. As a matter of fact, simple abdominal paracentesis should be reserved exclusively for the most extreme ascites producing respiratory and/or digestive embarrassment.

Ascites is a complex phenomenon that is not capable of explanation on a simple mechanical basis. Mechanical factors, however—at least in portal cirrhosis—play an important part in production of ascites. Among the factors considered responsible are: (1) obstruction to the hepatic venous outflow tract; (2) effect of colloidal osmotic pressure; (3) portal hypertension; and (4) sodium and water retention resulting from renal, adrenal, or posterior pituitary factors.

Treatment of cirrhotic ascites is primarily medical. In general, it consists of abstinence from alcohol, bed rest, and a diet which is rich in vitamins, low in salt and including adequate protein. Specific measures advocated include: (1) restriction of sodium intake; (2) replacement of serum albumin; (3) synthetic aldosterone antagonists; (4) synthetic corticoids in combination with mercurial diuretics; (5) vitamin B complex, choline, and other lipotropic agents; (6) crude liver extract; (7) fresh whole blood; and (8) abdominal paracentesis.

Complications resulting from medical management may include hyponatremia, precipitated by rigid salt restriction continued despite an intercurrent infection accompanied by fever and diaphoresis or diarrhea. Also, hypokalemia may result from hepatocellular failure, vomiting, diarrhea, and/or treatment with carboresins. Ammonia intoxication is an ominous indication of advanced hepatic insufficiency and may be precipitated by any intestinal bleeding or by a high protein diet.

Current surgical management of ascites—the principal purpose of this presentation—includes a variety of possible approaches:

Double Shunt. Combined hepatic and portal decompression has considerable theoretic merit as a method of reducing or eliminating ascites. By reduction of intrahepatic hypervolemia, the associated lymphatic distention and consequent extravasation are reduced or eliminated.

Intrahepatic vascular congestion is a striking feature of advanced portal cirrhosis and presumably is produced both by an inflammatory component of the disease itself and by obstruction to the outflow tract. The hepatic artery becomes enlarged to as much as three times its normal diameter, and potential or inactive arteriovenous shunts open up to further burden the already compromised portal circulation. Decompression of the hepatic and portal vein by double or side-to-side portacaval shunt will cause a reversal of blood flow not confined to the intrahepatic portal circulation alone; it probably introduces a significant arterial component into the inferior vena cava which may bypass the intrahepatic capillary circulation completely.

Side-to-Side Portacaval Shunt. This procedure has been advocated as "more physiologic" than the end-to-side portacaval shunt and less likely to produce ammonia intoxication because it does not produce a complete hepatic bypass of the portal circulation. Actually, the direction of blood flow is probably uniformly away from the liver toward the area of lowest pressure—into the caval blood stream where the intradiaphragmatic venous pressure is zero or even on the negative side.

Ileoentectomy. Ileal eversion is an effective maneuver to produce reabsorption of ascitic fluid into the circulating blood stream. However, for some unexplained reason this operation appears to reactivate esophageal bleeding.

Furthermore, production of intra-abdominal mucus with resultant loculation and abscess formation has been a protracted and troublesome complication.

Bilateral Adrenalectomy. This operation has been performed on man for intractable ascites. It eliminates aldosterone production, producing profuse diuresis and natruresis. The surgical procedure, however, is one of some magnitude for a patient who is a poor risk; some of the collaterals that may have developed between the adrenal, phrenic, and splenic veins may be disturbed with consequent troublesome, or even dangerous, bleeding at operation, and possibly disastrous postoperative elevation of portal pressure. In the postoperative period one is faced with management of two serious medical problems—adrenal and hepatic insufficiency. If adrenal insufficiency is completely compensated by administration of adequate steroid and by salt replacement, the ascites is apt to recur.

Subdiaphragmatic Transplantation of the Spleen. This technic has been employed with some reported success. The spleen is transplanted into a lateral peritoneal pocket after ligation of the splenic artery in an attempt to reverse the blood flow in the splenic vein. Three possible hazards involved in this procedure would be development of thoracic ascites, splenic infarct, and/or diaphragmatic hernia.

Isolation of the Liver. Consigning the liver to a separate abdominal compartment stems from the concept of extravasation of hepatic lymph as the principal cause of ascites and from the experimental observation that supra-diaphragmatic transplantation of the liver causes thoracic ascites and elimination of abdominal ascites. This technic is being developed currently and seems to afford some promise.

Ligation of the Hepatic Artery. This maneuver is highly dangerous and controversial. Originally recommended as an emergency method of portal decompression in the presence of bleeding varices, the operation had some justification as a desperate remedy for a desperate situation. It soon became apparent, however (in addition to the mortality rate of 30 to 40%), that ligation of the hepatic artery was a rather inefficient method of lowering portal pressure. In more recent years, therefore, it has been advocated chiefly as a method of treating ascites. Because it is so unphysiologic and hazardous a procedure, ligation of the hepatic artery is to be recommended last among operations currently employed for relief of ascites.

Comment. I should like to make it clear that I do not advocate any type of surgical intervention for ascites except in the unusual situation in which the patient has good liver function, is not in chronic cardiac decompensation, is no longer an alcoholic, fails to respond to good medical management, and has really troublesome symptoms caused by the ascites. In about 7% of cases, cirrhotic ascites will undergo resolution without treatment.

The pioneer work of Patek and his associates in 1948 showed that Laennec's cirrhosis is not a progressive, inevitably fatal disease. The cornerstones of good medical treatment are abstinence from alcohol, protracted bed rest, and a well rounded diet, supplemented by large amounts of vitamin B in addition to measures mentioned earlier.

If the patient has clear cut evidence of portal hypertension as manifested by recurrent hemorrhage from the upper part of the gastrointestinal tract and roentgen and esophagosopic evidence of esophageal varices, the best treatment is an end-to-end portacaval shunt. This may be performed as an elective procedure if the patient has a clear sensorium, if jaundice is absent, and if biopsy and functional tests of the liver show little or no evidence of active hepatitis. To reiterate, the shunt is performed primarily to prevent recurrent esophageal hemorrhage and only incidentally to correct ascites.

In the very occasional patient who has not bled and is in good hepatic equilibrium, but who has really troublesome and refractory ascites, I should advocate one to three paracenteses. If this measure fails—as it usually will—it should be discarded as repeated albumin-leaching paracentesis will often accelerate formation of ascites, aggravate the hypoalbuminemic state, injure or perforate the small bowel, introduce infection and chronic peritonitis, and produce a cutaneous ascitic fistula.

* * * * *

Prognosis in Carcinoma of Breast

Stephen W. Gray Ph D, et al, The Department of Anatomy, Emory University, Atlanta, Ga. Tumor Size, Duration of Symptoms, and Prognosis in Carcinoma of the Breast. Surgery 49:143-148, February 1961.

The size of a breast tumor at operation and the duration of its symptoms prior to operation are readily available from most patient's histories. Prognostic value of these facts is at present obscured by contradictory reports. We have attempted to relate these factors to each other, to the age of the patient, and to the prognosis of the disease.

As might be expected, few tumors of the smallest size had been evident for over one year. Among 223 tumors, 44 (20%) were detected early enough that they were still under 2 cm in diameter at time of removal. Ninety-three (41.7%) in all size classes were operated upon within one month after discovery. Of the 32 largest tumors said to have existed for one month or less, 12 proved fatal in less than 5 years.

When the incidence by size at operation was considered from the standpoint of whether the patients were under or over 50 years of age, more smaller tumors were found among the older patients. This is in agreement with a slight decrease in postmenopausal mortality rate and a better 5-year survival rate (62.5% compared with 51% among women under age 50) found among the older patients in our earlier study.

When the time between discovery of the tumor and operation in the older women was considered, there was a marked difference. Twice as many women under age 50 waited for one year or more before seeking help than did older women; over half the women operated upon within the first month were in the older group. It is probable that fear of mutilation weighs less heavily upon

postmenopausal women than does the fear of death in comparison with women still in the childbearing age. They are hence less prone to procrastinate. The greater likelihood that a swelling in younger women may prove to be benign mastitis perhaps contributes to the delay in operative treatment.

Tumors were more common in the upper half of the breast among patients in this series. There were 165 in the upper and 67 in the lower half. There was a slight tendency, probably not significant, for those in the lower half to be smaller at time of operation. Although the size difference was not marked, tumors in the lower half of the breast resulted in earlier operation than did those in the upper half. No differences in time of discovery were found when medial or lateral halves of the breast were compared; likewise, there was no difference in the pattern of occurrence between the right and left breasts.

Thirty-four of 52 patients with tumors 4 cm or larger at operation died within 5 years after operation, while only 28 out of 83 with smaller tumors died. Survival rate was, respectively, 34.6% and 66.3%. Half of the patients with tumors under 2 cm in diameter were free from disease 5 years after operation; those with large tumors revealed only about a 20% 5-year "cure."

Tendency toward earlier discovery of large tumors was more marked among patients who eventually lived for 5 years or more after operation than among the shorter-lived patients. Time elapsing from discovery to operation was less important, however, than was the size the tumor had reached at the time of operation in the same group of patients. Of women surviving operation for 5 years or more, 75% had tumors less than 4 cm in diameter. Of those who died sooner, fewer than 50% had tumors so small. None of the 33 patients considered free from disease 5 years after operation had had a tumor 6 cm or larger in diameter at time of operation, whereas 12 out of the 62 patients who had died of cancer within 5 years had had tumors in this size range.

Among 72 patients known to have died of cancer, 36 (50%) had had tumors of less than 4 cm in diameter at operation. Of this group, 9 (25%) were alive 5 years after operation. Among the 36 with tumors 4 cm or larger at operation, only 2 (5.6%) lived this long.

Thus, even when the patient is doomed to die of her disease eventually, the size of the tumor at operation is still related to her life expectancy.

As a breast tumor may be assumed to start from one or a few cells, it should be evident that increasing size and increasing delay in treatment represent progress of the disease. There has been little agreement, however, as to the prognostic value of these two factors because reports have been made indicating metastasis from small tumors which were assumed to have been of short duration. Furthermore, a wide variation in rate of growth of tumors is generally recognized.

Duration of symptoms does not correlate well with size of the tumor at operation or with subsequent survival time. To what extent this may be due to poor memory of the patient rather than to the nature of the disease is not clear. We believe that it is largely due to variations in rates of tumor growth. Size of the tumor is of considerably greater value in prognosis with respect

to subsequent freedom from disease and to survival time even when death from cancer eventually occurs. Prognosis for subsequent freedom is about twice as good for patients with tumors of less than 4 cm. Even for patients not free of their disease, the 5-year survival rate is 4 times as great for those with smaller tumors at operation.

* * * * *

Nitrites in Bronchial Asthma

Irving Hirshleifer MD and Yogesh Arora MD, Kings County Hospital Center, Woodmere, N. Y. Nitrites in the Treatment of Bronchial Asthma. Dis Chest 39: 275-283, March 1961.

Spasm of smooth muscle of the bronchi and bronchiole, edema of mucosa leading to mucous collection, and occlusion of alveoli probably cause most of the symptoms of asthma. This resultant bronchial inflammation and obstructive emphysema may be acute, recurrent, or chronic. The degree to which these changes interfere with the passage of respiratory gases determines the severity of the condition.

For many years, sympathomimetic drugs have been the foundation upon which the majority of bronchial asthmatic remedies have been built. The xanthines came into use because of their ability to relieve smooth muscle spasm. All these drugs are effective in various degrees, but resistance develops to each, and side effects may limit the quantities used. One attempt to overcome resistance that the patient develops to the sympathomimetic drugs was utilization of the drugs in combination with ganglionic blocking agents. This is of some help, but the potency of the ganglionic blocking agent used is limited by the undesirable side effects or extension of action of the drugs. Steroids have been used during the past decade, but here again, dangerous side effects appear with increased dosage and/or prolonged administration. An additional problem is reexacerbation of the disorder if withdrawal of the drug is too abrupt.

Ideally, bronchodilation should be the only effect of a drug used for symptomatic relief of bronchial asthma. Bronchodilation leads to an increased rate and depth of respiration. Oxygen intake is augmented and the level of oxygen consumption of the tissue cells elevated, producing greater tissue oxygenation. The relaxing action of the nitrites on smooth muscle was recognized and exploited to effect bronchiole dilation early in the modern era of medicine. However, about the end of the first decade of this century, these drugs gradually lost favor and fell into disuse.

In recent observation, when nitroglycerine was employed in patients in varying degrees of congestive failure, it was noted that cases of cor pulmonale associated with chronic bronchial asthma had the greatest relief of respiratory distress. It was postulated that the nitrite had a two-fold action both in reducing the pulmonary artery hypertension and in relieving the concomitant bronchial spasm. With these observations in mind, it was thought feasible to

conduct a study of the effects of nitrites on patients with bronchial asthma, using nitroglycerine as short acting, and erythrol tetranitrate as long acting, nitrite.

Nitroglycerine (0.6 mg) was administered sublingually to 11 patients during acute episodes of bronchial asthma. In all cases except one—who refused to perform the function tests—there was improvement in the one second vital capacity; all patients showed subjective improvement.

Three patients with bronchial asthma varying from 6 to 18 years were given erythrol tetranitrate; increased timed vital capacity and subjective improvement was noted in all.

Two patients were given nitroglycerine (0.6 mg) sublingually and orally. Results indicated that the two methods of administration have equal therapeutic value.

Six patients were evaluated with erythrol tetranitrate, nitroglycerine, and isopropylarterenol (Isuprel). Time of onset of action usually began within 10 minutes with all three drugs. The maximum effect averaged 20 minutes for nitroglycerine and isopropylarterenol and 45 minutes for erythrol tetranitrate.

Results of this study indicate that oral administration of nitrites is feasible; potency compares favorably with isopropylarterenol, and duration of effect is superior. Undesirable side effects of the nitrites are minimal and have been known and studied for years. Resistance to nitrites as used for angina pectoris has never been much of a therapeutic impediment. We believe that this investigation indicates a place for the nitrites in the armamentarium of drugs used to treat bronchial asthma.

* * * * *

Intestinal Complication of Digitalization

Peter C. Gazes MD, et al, Department of Medicine, Medical College of South Carolina, Charleston, S. C. Acute Hemorrhage and Necrosis of the Intestines Associated with Digitalization. *Circulation* 23: 358-364, March 1961.

Enterocolitis is a rather common entity seen often in a variety of forms by the clinician and the pathologist. There have been four reports of special types of gastrointestinal lesions in the patient with cardiovascular disease. During the past 10 years we have observed, clinically and at autopsy, 10 cases of acute hemorrhage and necrosis of the bowel in patients with cardiac disease. In one additional case no autopsy was obtained, but similar pathologic lesions were seen at laparotomy. Although the etiology is not apparent, it is of interest that all these patients had received large amounts of digitalis and seven were in digitalis toxicity.

Digitalization is considered as the main associated factor in these cases, especially since there was no mesenteric arterial involvement and only venous engorgement. In the cases observed, the intestine characteristically showed

marked venous engorgement with hemorrhage and edema of the wall. These changes are likely to be described as gangrenous by the surgeon or pathologist. In the strict sense it is not gangrene since there is usually very little inflammatory reaction and no massive infarction. The darkening of the intestine is due to the profound venous engorgement which may be further intensified by blood in the lumen and mucosa.

The gastrointestinal tract in this condition is not uniformly involved and most commonly shows a segmental or patchy distribution. The stomach was involved in only three instances and seldom to the degree observed in the intestine. Some portion of the small intestine was implicated in all instances and the degree of involvement was usually extensive. It was remarkable that an uninvolved segment of intestine could occur with massive changes in the contiguous bowel.

On review of the literature on intestinal complications of digitalis, reports indicate varying physiologic disturbances which are proposed as being responsible for the pathologic changes in the bowel. However, none offer conclusive evidence as to exact etiology. In view of the considerable experimentation and discussion related to the effects of digitalis glycosides on the liver and portal system, it is possible an extracardiac action of digitalis—especially in over-dosage—produces pooling of blood in the splanchnic venous system. Various hemodynamic studies offer indirect but highly suggestive evidence that digitalis exerts constrictive effects in the liver or hepatic vein structures. Such effects presumably can occur to a marked degree with excessive digitalization.

Congestive failure, especially when chronic in nature, can be an additive factor with overdigitalization. However, if congestive failure were the sole cause of intestinal pathology seen in these cases, this bowel syndrome would be expected to be seen more often.

This intestinal necrosis syndrome can be suspected when a patient develops abdominal pain while receiving large amounts of digitalis; unnecessary surgery thus may be avoided. Frequently, a diagnosis of mesenteric thrombosis or embolism is suggested. Abdominal examination and roentgen films do not reveal any characteristic diagnostic features. It is well to stress again, especially with advent of so many new preparations, that patients should be digitalized with caution. The antiemetic tranquilizer drugs are often given during digitalization; if so, early nausea of digitalis toxicity may be masked. Furthermore, maintenance digitalis alone can produce toxicity in the presence of potassium loss, such as occurs with diuretics and steroids.

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Early learn to appreciate the differences between the descriptions of disease and the manifestations of that disease in an individual—the difference between the composite portrait and one of the component pictures.—Osler

* * * * *

Effect of Chloramphenicol on Erythropoiesis

Parvin Saidi MD, Ralph O. Wallerstein MD, and Paul M. Aggeler MD, Hematology Research Laboratory, Children's Hospital, San Francisco, Calif. *J Lab Clin Med* 57:247-256, February 1961.

Aplastic anemia in patients treated with chloramphenicol has been reported repeatedly since 1950. Most of the patients described had serious clinical manifestations and many died. The nitrobenzene moiety of the chloramphenicol molecule has been implicated as the responsible chemical factor, but the exact mechanism of these untoward changes is unknown.

The discovery of striking but reversible morphologic changes in the bone marrow associated with erythroid hypoplasia in patients treated with chloramphenicol led to this study of the effect of chloramphenicol on the blood and marrow in several clinical conditions. The antibiotic was given to 22 patients with infections, 6 anemic patients, and 7 normal individuals.

The outstanding bone marrow finding was appearance of numerous vacuoles in the cytoplasm and nuclei of primitive erythroblasts. A marked decrease in nucleated red cells, primarily of late erythroblasts and normoblasts, was a common finding. In the peripheral blood, red blood cells, reticulocytes, white blood cells, and platelets were often decreased in number when the marrow abnormalities were first seen, but there were no significant morphologic abnormalities.

Bone marrow depression may follow administration of certain chemical and physical agents. These potentially toxic substances may produce their effects in several different ways—they may alter the genetic nuclear material, inhibit mitosis, or impede nucleic acid synthesis, cell respiration, or hemoglobin synthesis. Host factors may be important in development of these changes. There may be variation in the nutritional status or individual sensitivity; there may be differences in absorption, excretion, or enzymatic inactivation of the drug. Cardiovascular collapse in young infants treated with chloramphenicol presumably caused by the failure of glucuronide conjugation is an example of a host factor.

Reports of aplastic anemia caused by chloramphenicol are rare considering the widespread use of the drug (net sales in 1959 exceeded \$70,000,000). Accounts of mild and reversible hematologic changes are even rarer. Yet there is evidence that chloramphenicol frequently depresses erythropoiesis. Therefore, mild reversible hematologic changes may not be uncommon if carefully looked for. These changes may escape detection because anemia developing during chloramphenicol therapy might be mistaken for anemia of infection, and a spontaneous rise in the red cell count and hemoglobin concentration, when the infection is controlled and chloramphenicol therapy is discontinued, seemingly would confirm this diagnosis.

The effect of chloramphenicol on marrow and blood could be clearly observed in anemic subjects. When it was administered, reticulocytes began to fall within 24 hours in 2 subjects with pernicious anemia on vitamin B₁₂ therapy,

but similar falls were delayed for approximately 5 days in 2 patients with iron deficiency anemia on iron-dextran therapy.

Most of the patients in this study received chloramphenicol for relatively short periods, usually 7 days. Aplastic anemia following chloramphenicol therapy has occurred in the majority of cases after repeated or prolonged therapy. It is, therefore, difficult to make comparisons and the events described may be entirely unrelated to pathogenesis of aplastic anemia. However, the severe reduction in the marrow nucleated red cells suggests that the difference may be only quantitative. In the group of patients reported, normal marrow and blood values became reestablished when chloramphenicol was discontinued.

Although this study is primarily concerned with recording certain hematologic observations after chloramphenicol administration, data permit some tentative conclusions: (1) results in the patients with infections suggest that dosage is a factor in production of marrow changes; (2) the frequency of hematologic changes observed in patients with anemias cannot be explained by individual hypersensitivity alone; (3) contrast between the high incidence of hematologic abnormalities in patients with infection or anemia and absence of changes in the group of normal subjects indicates the presence of host factors; and (4) anemic subjects with active marrows appear to be particularly sensitive to the marrow depressing effects of chloramphenicol.

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Rubella and Congenital Heart Disease

Maurice Campbell MD, Guy's Hospital, and the Institute of Cardiology, London, England. Place of Maternal Rubella in the Aetiology of Congenital Heart Disease. Brit Med J, No. 5227, March 11, 1961.

In 1941, Gregg of Australia made the clinical observation that maternal rubella in early pregnancy was followed by congenital cataract and malformation of the heart. This discovery was important not only in itself, but it stimulated wide interest in the etiology of congenital heart disease—a problem that had seemed to be without a clue to its solution.

The mechanism by which these malformations are produced is of great interest. The virus of rubella circulates in the maternal blood during the incubation period and for a short time after, and passes through the chorionic epithelium to the blood-stream of the fetus. A strikingly selective action on the heart and on three epidermal structures of the fetus has been found. In the epidermal structures the respective cells are severely damaged; they become swollen and vacuolated, and sometimes destroyed. This results in a central cataract (most often bilateral), deafness from damage to the internal ear and the cochlea (less often bilateral), and defects of the dental enamel.

Particularly concerned with heart malformations, study was made to answer four questions: (1) What is the risk to the child after maternal rubella

during pregnancy? (2) When the heart is affected, what malformations are most common? (3) Looking at congenital heart disease as a whole, what proportion is due to maternal rubella? (4) How important are any other infections, viral or bacterial?

From detailed and extensive review of numerous reports and analyses, certain conclusions can be made. The risk of abortion and of malformations in the child after maternal rubella during the first 12 weeks of pregnancy is considerable, though it must still be expressed as lying between wide limits. It is between 30 and 70% during the first 4 weeks, 25 and 55% during the second 4 weeks, 20 and 40% during the third 4 weeks, and 10 and 25% during the fourth 4 weeks; later than this there is no increased risk. Perhaps the lower figures are nearer the true risk generally and the higher ones apply to particular epidemics.

Deafness is the greatest risk, then congenital heart disease, and then cataract; mental defect and microcephaly and several other malformations are lesser risks. All may occur alone or quite often in combinations. Of the heart malformations, persistent ductus is much the most common (58%), then ventricular septal defect (18%). In about 6% of these the two defects are combined, and in ordinary practice this is not a common finding. Atrial septal defect, pulmonary valvular stenosis, and tetralogy of Fallot each occur in about 6% of cases. This distribution is quite unlike anything found under other conditions.

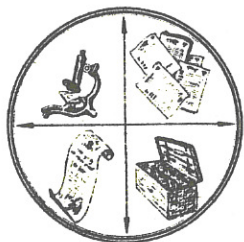
Numerically, maternal rubella during pregnancy is not one of the major causes of congenital heart disease, though it is one of the best-proved causes. It is responsible for something between 2 and 4% of all cases. At the Congress of Congenital Malformations in London in July 1960, the proportion of all cases caused by maternal rubella and all other viral infections was thought to be less than 10%.

Other viral infections, including mumps, measles, epidemic hepatitis, and poliomyelitis, can produce similar malformation. However, it seems unlikely that they often do so, though measles and even minor infections during pregnancy need further investigation.

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T-Wave Abnormalities. The response of the ST-T segment of the ECG to changes in posture was studied in two groups of normal subjects. One of these had abnormal recumbent tracings due to ST-T abnormalities. The other had normal recumbent electrocardiograms. The response to the erect position was marked in the first group, the result being a distinct increase in the abnormalities or a return to normal. Approximately 50% of those who had a normal recumbent ECG developed significant T wave flattening or inversion in the erect position. (W. Bonner and J. Durant, Amer J Med Sci, February 1961)

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MISCELLANY

AFRRI Directorate Nominated

The Board of Governors of the Armed Forces Radiobiology Research Institute (AFRRI) recently met and nominated officers for the Directorate of the facility which is being constructed on the grounds of the National Naval Medical Center, Bethesda, Md. (Medical News Letter, 16 December 1960). COL J.T. Brennen MC USA was nominated as Director, with CAPT Francis W. Chambers Jr MSC USN and LTCOL Carl Hansen USAF MC nominated as Deputy Directors, representing the other two Armed Services.

In addition to nominations for the Directorate, CAPT Frank Norris MC USN, LTCOL M. W. Conrad USAF MC, and LTCOL R. F. Lerg MC USA were named to represent the three Services as members of the AFRRI ADMOC Manpower and Resources Committee.

The Radiobiology Research Institute will include a Department of Defense nuclear reactor facility under the sponsorship of the Defense Atomic Support Agency, and is being built in order that broad research programs dealing with biomedical effects of radiation may be carried out by scientists of the three Services, other Federal agencies, and civilian organizations. This will be the first pulse type reactor designed solely for medical research. It will be built by the General Atomic Division of the General Dynamics Corporation, San Diego, Calif., and is expected to be completed in early December 1961.

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Inspector General's Reports

During recent inspection trips of the Inspector General, Medical, certain discrepancies were found to be widespread throughout Medical Departments and in Station and Naval Hospitals. Because the pattern has been so consistent and widespread, regardless of the type or size of facility, specific identification of discrepancies in various areas is presented for the attention and guidance of responsible personnel. From time to time, description of other infractions will be presented in the News Letter with the hope that they will be helpful to those concerned.

1. Noncompliance to paragraph 9a and 9b, BUMED INSTRUCTION 6700.25. This instruction pertains to Emergency Medical Treatment

Units, Phase I and II. The custodian and a disinterested officer shall be appointed in writing by the Commanding Officer. THIS IS A MUST.

2. Persons other than the Collection Agent have the combination to the Collection Agent's safe. NavCom Manual Vol. 4, Chapter 2, is clear on this point—only the Collection Agent should have the combination to his safe and the combination should not be reduced to writing. This applies to the Cash Collector's safes as well.

3. Several persons working in pharmacies have the combination to the pharmacy safe in which narcotics are stored. When more than one individual has the combination to any safe, responsibility cannot be fixed.

4. Noncompliance with NavMed P-5040 and BUMED INSTRUCTION 5100.1B as they relate to the storage and handling of gas cylinders, particularly oxygen cylinders.

5. In health records, there often have been found instances of failure of the medical officer to sign clinical entries which he himself makes.

6. Records of conductivity tests in operating rooms, testing of operating room lights for stability, and culture of autoclaves are not being maintained. These records should be maintained and kept readily available in the operating room.

7. There is a requirement that thermometers must be placed in all refrigerators in which formulas for infants are stored. Practically no one complies with this requirement.

8. Antidote lockers in many instances are found to be inadequate. These lockers should be adequately stocked and inventory of the contents posted on the locker. An up-to-date poison reference should be available in the locker and the telephone number of the nearest poison center posted. Furthermore, a seal which can be broken should be placed on the door of antidote locker—as long as this seal is intact, it may be presumed that the contents of the locker are adequate and up-to-date. When broken, inventory and contents should be checked and locker resealed.

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The Surgeon General Attends SHAPE Meeting

Rear Admiral E. C. Kenney, Surgeon General of the Navy and Chief of the Bureau of Medicine and Surgery, and Rear Admiral C. B. Galloway MC USN, Assistant Chief for Research and Military Medical Specialties, BuMed, accompanied the Honorable Frank B. Berry MD, Senior Medical Advisor to the Assistant Secretary of Defense (Manpower) to the NATO-SHAPE Medical Conference in Paris, 3 - 5 May 1961. Enroute to the meeting, Dr. Berry's group visited Naval Activities, Rota, Spain, and the Naval Medical Research Unit No. 3, in Cairo, Egypt. Project officer for the visit was CDR H. E. Sinclair MSC USN, Aide and Administrative Assistant to the Chief of the Bureau. (TIO, BuMed)

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Yokosuka Hospital Graduates Japanese Interns

On 31 March 1961, fourteen Japanese physicians were graduated from a one-year internship at the U. S. Naval Hospital, Yokosuka, Japan, under the command of CAPT William N. New MC USN (in the photograph seated second from right in bottom row). The ceremonies, taking place in the hospital auditorium, were attended by the U. S. Consul General, Yokohama; the Scientific Attache of the U. S. Embassy, Tokyo; and the Chief of Medical Bureau, Ministry of Health and Welfare of Japan. Military representatives other than staff members of the hospital included the Commander, Naval Forces, Japan; Commander, U. S. Seventh Fleet; Commander, U. S. Fleet Activities, Yokosuka; and the Surgeon General of the Japanese Maritime Self-Defense Force.



During the 12-month internship, under the direction of the Chief of Medicine, CAPT Harry Weiss MC USN (second from left, second row), the Japanese physicians received extensive training in each of the hospital's 14 clinics. They were selected by the Tri-Service Intern Committee, established in 1960, which is composed of medical officers attached to U. S. Army, Navy, and Air Force hospitals in Japan. The Committee reviews applications of prospective interns and administers written and oral tests to determine qualifications of the applicants for the program. The intern's academic record in medical school is also taken into consideration.

The class of interns were graduates of 10 medical schools located in Japan; three from Osaka University, two each from Kyoto and Tohoku University, and one each from Gunma, Hiroshima, Chiba, Niigata, Okayama, and Keio Universities, and Junten-do Medical College. Four of the group are scheduled to come to the United States for further training.

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Nurse Corps Anniversary

On 13 May 1961, the Nurse Corps of the Navy observed its 53rd anniversary, having been established by an Act of Congress on that date in 1908. Noting the occasion, Rear Admiral E. C. Kenney, Surgeon General of the Navy, addressed a letter to all Navy Nurse Corps officers:

"It is with great pleasure that I send my most sincere congratulations to all of you on the forthcoming 53rd Anniversary of the establishment of the Navy Nurse Corps May 13.

As very important members of the Medical Department team, your devotion to duty and your contributions to the health of the people of this nation and throughout the world lend strong support to the accomplishment of our mission.

Although rapidly changing concepts of medical and nursing service have taken place during recent years, accordingly you have adapted nursing practice to support the needs of a nuclear-powered Navy and a technological age.

I am sure that present and future Navy nurses will, as have those in the past, add interesting chapters to the history of the Navy Nurse Corps.

HAPPY BIRTHDAY"

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Materiel Change for FMF Activities

Joint MMSA, FB BUMED INSTRUCTION 6700.1 forthcoming change transmittal contains information relative to the deletion of FSN L6505-299-9673 Atropine Injection, 2 mg (1/32 gr) per cc, 25cc as a line item from certain FMF activities and the addition of three units as a component of FSN L6545-919-1500 Medical Instrument and Supply Set, Dispensary, Field, FSN L6545-927-4200 Surgical Instrument and Supply Set, Combat and FSN L6545-927-4400 Medical Supply Set, Field Supplemental Supplies.

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BUMED INSTRUCTION 6224.1A

19 April 1961

Subj: Tuberculosis control program

This directive reemphasizes the tuberculosis control program in the Navy, establishes procedures for contact investigations, and delineates areas of responsibility in the program.

From the Note Book

For—or Against? This issue of the News Letter is the third in which experimentation with a modified format has been made. The Reserve and Preventive Medicine Sections of this issue are printed in the shorter line, 2-column page which is easier to read. Comments from readers are invited as to desirability of continuing and expanding use of this format throughout the News Letter. Address the Editor, Medical News Letter, Bureau of Medicine and Surgery (Code 18), Department of the Navy, Washington 25, D. C.

Assistance Given in Ethiopian Epidemic. On 17 April 1961, a team led by CAPT Sidney A. Britten MC USN, Officer in Charge, U.S. Navy Preventive Medicine Unit No. 7, Naples, Italy, departed for Addis Ababa, at the request of the U. S. Department of State, to assist the Imperial Ethiopian Government in connection with the yellow fever epidemic in the southwestern part of the country. Three hospital corpsmen with two Multidose Automatic Jet Injectors on loan from the U. S. Naval Air Station, Norfolk, Va., joined CAPT Britten and CDR L. W. Teller MSC USN, Entomologist of PMU #7. The team was prepared to vaccinate some 100,000 persons against yellow fever and provide epidemiologic and entomologic assistance to the people of Ethiopia in cooperation with the Imperial Government, the World Health Organization, and the Red Cross. (TIO, BuMed)

Acoustic and Audiometric Technicians. The first graduating class of the Acoustic and Audiometric Technicians Course received their certificates of achievement at Pensacola on 7 April 1961. In the class were two technicians from MCAS El Toro and one each from NAS Cecil Field, NAS Oceana, MCAS Cherry Point, USS ENTERPRISE, and USS KITTY HAWK. The course was organized by the U. S. Naval School of Aviation Medicine at Pensacola, Fla., at the request of CAPT Walton Jones MC USN, Head of the Aviation Medicine Branch, BuMed, as part of the U. S. Navy Hearing Conservation Program. The 2-week course provides indoctrination for technicians in the basic facts of acoustics, audiometry, general methods of measuring noise, and proper utilization and maintenance of audiometry equipment. Graduates will be qualified to administer the new 10-man group audiometer test under the supervision of a medical officer.

Staff Activities - USNH San Diego. CAPT Bruce L. Canaga MC USN, presented a paper—The Bangungut Syndrome of Acute Cardiac Dilatation and Death in the Filipinos—before the California Chapter of the American College of Chest Physicians at Los Angeles.

CAPT Rudolph P. Nadbath MC USN addressed the Pacific Coast Ophthalmological Society Meeting at Palm Springs on Difficulties and Complications in Contact Lens Fitting.

LT Stuart H. Mann MC USNR discussed Treatment of Bell's Palsy with Prednisone at the Los Angeles County Medical Association Meeting; also The

Importance of an Optometric Examination to a Neurologist, at the San Diego County Optometric Society.

LT John M. Sheehan MC USNR presented a paper—An Evaluation of the Cheng Needle in the Administration of 1000 Single Dose Lumbar Epidural Anesthetics—at the Los Angeles County Medical Association Meeting.

Erratum. In the table presented in connection with the article, Survival in the Jungle from an Entomologic Standpoint, appearing in the Medical News Letter, 7 April 1961, on page 34, the first sentence under TICKS, PROTECTION should read: "High shoes, boots, leggings, socks pulled over pants."

Cataract and Glaucoma, Hope Through Research is the title of a pamphlet recently prepared by the National Institute of Neurological Diseases and Blindness, NIH. An estimated million persons in the U. S. have glaucoma without knowing it, and thousands become blind unnecessarily from the ailment every year. Even more people become blind from cataract, a better known but often neglected eye ailment. This is also largely preventable, the pamphlet declares. These and other facts are underscored in the pamphlet (PHS Publication No. 793 and Health Information Series No. 99), single copies of which may be obtained without charge from the Public Health Service. Quantities may be purchased from the Government Printing Office.

Epidemiologic Notes. A sustained high incidence of hepatitis continues. A total of 1821 cases was reported for the week ending 22 April, an increase over the 1693 reported the previous week. States contributing significantly to this increase include New York, Pennsylvania, Maryland, Ohio, Indiana, Illinois, Kentucky, Alabama, Oklahoma, and California. (Morbidity and Mortality, PHS DHEW, April 28, 1961)

Rheumatoid Spondylitis. A follow-up study by means of questionnaire in 142 male veteran patients with rheumatoid spondylitis was made with the findings that such patients, in general, have a good prognosis with regard to both general health and employability. No definite correlation was found between employability and intensity of x-ray irradiation. (A. Lefkovits and J. Thomas, Ann Int Med, January 1961)

Acute Gastroduodenal Perforation. Analysis of 400 patients surgically treated for acute perforation of gastroduodenal ulceration has been presented. Patients treated by immediate subtotal gastrectomy (277) had a mortality rate of only 2.2% while mortality in 110 patients treated by simple closure was 10.9%. The authors conclude that immediate subtotal gastrectomy is the treatment of choice for patients with acute perforated gastroduodenal ulceration unless some specific contraindication exists, such as associated severe disease, presence of shock, or purulent peritonitis. Follow-up results indicate that immediate gastrectomy has given good or excellent results in 87.3% of 73 patients followed. (G. Jordan Jr and M. DeBakey, Amer J Surg, March 1961)

Thrombolytic Therapy. At the present state of knowledge concerning thrombolytic therapy, establishment of sound scientific principle must continue to take precedence over practical trial based on poorly controlled or empirical observation if the inherent promise in this new and exciting field is to be realized. Recent progress with the former has been gratifying and therapeutic principles have been established; their practical application could result in an effective form of thrombolytic therapy. However, thrombolytic therapy remains at the clinical investigational level and should remain so until practical and reasonable—if not complete—solutions are available for all its major problems. (W. Sawyer, et al, Arch Int Med, February 1961)

Incision and Suction for Snakebite. In another study on animals, the authors confirm previous reports that significant amounts of toxic substance can be removed following experimental injection of snake venom. However, the authors have reservations about experience gained in animals applied to an evaluation of usefulness of incision and suction in man considering several factors involved in the complete picture of snakebite and comparative sizes of subjects. (F. Russell and J. Emery, Amer J Med Sci, February 1961)

Serum Cholesterol Levels. Serum cholesterol data from 95 normal male subjects was compared to those obtained from 88 patients with coronary heart disease for the purpose of evaluating differences in relation to age. It was observed that the greatest difference between mean cholesterols from these two groups was in the youngest (4th) decade and that the difference diminished with increasing age through the 6th decade. (H. Orvis, et al, Amer J Med Sci, February 1961)

Penicillin-Streptomycin Combinations. If the number of parenteral penicillin-streptomycin preparations available to the physician is a reflection of their popularity, they are being seriously misused; there are few clear-cut indications for simultaneous treatment with the two antibiotics, and for these indications the fixed-ratio combinations are likely to be either inadequately effective or hazardous. Too often the combinations are used in home and office as well as in the hospital as an antibiotic blunderbuss. (The Medical Letter on Drugs and Therapeutics, February 17, 1961)

Hyperhidrosis. Hyperhidrosis of the feet is a common problem; it is embarrassing and uncomfortable, and can have fairly serious consequences. Viewing unsatisfactory results from most everything currently employed, the authors studied the effects of diphemanil methylsulfate (Prantal) as a 2% dusting powder (not commercially available as yet). Hyperhidrosis was eliminated or greatly reduced in 75 patients treated. There was no instance of sensitization and no effects indicative of systemic absorption were observed. (D. Hackbarth and L. Markson, Arch Derm, April 1961)

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DENTAL**SECTION**

Causes of Cracks in Resin Material

Masatoshi Miyamoto, Nihon University School of Dentistry, Tokyo, Japan.
J Nihon Univ School Den 2: 163-168, March 1960.

A series of experiments has been carried out to determine the causes of crazing of methyl methacrylate polymer dentures. Uniform sizes of material measuring 30 by 20 by 1.5 mm were used. A simple apparatus was devised by means of which vaporized methyl methacrylate could be applied to the test specimens.

In one experiment, specimens were exposed to such solvents as acetone, benzene, and toluene; the length of time until macroscopic crazing developed was noted. Another experiment was undertaken to determine whether a relationship existed between the curing cycle and crazing; no relationship was observed. The role of water sorption on crazing was the subject of a third experiment. Finally, the effect of heat treating was observed. It was concluded that crazing is brought about by the combined influences of dissolution, sorption of water, and existence of internal stresses.

Sweeney and others (1955) had concluded: "Sorption of excess water at elevated temperature causes the surface of the material to be super-saturated with water when the specimen is cooled. Evaporation of excess water sets up strains which eventually are released by the formation of craze marks." Another possible explanation is that crazing is caused by differences in the degrees of polymerization; spots of low polymerization are selectively dissolved and thereby give rise to crazing. The imbalance of internal stresses is further influenced by the water sorption.

The major cause for crazing in acrylic dentures is the type of mold used and the permeability of the separating mediums to water. A metal mold is ideal, but even use of a plaster mold can check the development of crazing if tin foil is used as a separation medium. Crazing in an acrylic denture base can be rectified to a large extent by recuring it at 65 C for one hour after the denture has been embedded in a plaster mold; then, at 100 C for another hour.

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Dental Research in USSR

The Presidium of the Academy of Medical Sciences of the USSR has approved a 7-year research plan for 1959-1965 to study health problems connected with dental caries and periodontitis including the following: creation of an experimental model of dental caries; study of mineral and protein metabolism in hard and soft tissues of the teeth under normal conditions and caries formation; significance of vitamin balance in dental pathology; influence of the general condition of the organism on formation of caries and its geographic distribution; experimental reproduction of periodontitis; histochemical study of normal tissues; and study of prevention and treatment of periodontitis. The dental departments of the Universities of Moscow, Kharkov, Kiev, Odessa, Leningrad, Perm, Kalinin, Kazan, Krasnoïarsk and Riga will participate in the research program, although the leading research center will be the Moscow Stomatological Institute. (Federation Dentaire Internationale News Letter, No. 34, March 1961)

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CAPT Beach Guest Lecturer at Dental School—CAPT Edward L. Beach USN, Commanding Officer of the twin-reactor nuclear submarine, USS TRITON, appeared on the U. S. Naval Dental School's Guest Lecture Program on 31 March 1961, at the National Naval Medical Center, Bethesda, Md.

CAPT A. R. Frechette DC USN, the School's Commanding Officer presented CAPT Beach to the audience of officer and enlisted personnel from all commands of the Center, as well as other civilian and military guests. In addition, the program was televised over the Medical Education Distribution System.

In his introduction, CAPT Beach described his feelings when he learned that, instead of preparing his ship for its first shake-down cruise, he was to prepare it for making the first submerged circumnavigation of the globe—a feat only a nuclear powered submarine could accomplish. He explained the psychologic problem of breaking this secret news to his crew and the extensive provisions necessary for such a scientific exploring and data-collecting mission. The motion picture, "Beyond Magellan", produced by General Dynamics Corporation in cooperation with the U. S. Navy from film taken on this historic voyage, was then shown.

On 16 February 1960, the USS TRITON, with her crew of 183 modern "Magellans" submerged off New London, Conn., and returned three months later to complete the world renowned, first submerged circumnavigation of the globe. The immense amount of scientific data collected included results of studies of variations in gravity; problems of air revitalization, so peculiar to a sealed environment; and psychologic reactions of the crew.

In his concluding comments, CAPT Beach expressed the thrill of having shared in the honor of establishing another important "first" for the Navy and our country in contributing to man's stride forward in harnessing nuclear power.

In addition to his submarine career that includes World War II service, CAPT Beach has served as Naval Assistant to the Chairman of the Joint Chiefs of Staff, and as Aide to the President of the United States. He has written two books, "Submarine" and "Run Silent, Run Deep."

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Personnel and Professional Notes

Dental Officers at AFIP Course. RADM C. C. DeFord DC USN, Inspector General, Dental, represented the Bureau of Medicine and Surgery at the Post-Graduate Course, "Pathology of the Oral Regions," held at the Armed Forces Institute of Pathology, Washington, D. C., 10-15 April 1961. Dental officers participating in the course—Diplomates of the American Board of their respective specialty—were: CAPT L. S. Hansen (Dental and Oral Pathology Division, AFIP), Seminar Director in addition to discussing Keratotic Lesions of the Mouth, and Epithelial Lined Cysts of the Jaws; CAPT H. H. Scofield (Chief, Oral Pathology Division, Naval Dental School) presenting Carcinoma of the Oral Cavity, Parts I and II; CAPT D. E. Cooksey (Oral Surgery Division, Naval Dental School) presenting Injuries Associated with Facial Trauma.

Parris Island Dental Study Club. Dr. J. M. Hawley of Columbus, Ga., a former President of the Georgia Dental Society and well known Southeastern United States lecturer, was the guest speaker at the March meeting of the Parris Island Dental Study Club; the subject, Practice Management.

CDRs Armstrong and Hunley at Nashville Meeting. CDRs L. M. Armstrong and T. R. Hunley DC USN, U. S. Naval Dental School, NNMC presented a Table Clinic, Bread and Butter Dentistry—Operative Procedures, at the March Postgraduate Clinic of the Nashville Dental Society, Nashville, Tenn.

LCDR Flagg Lectures in Manila. LCDR R. H. Flagg DC USN, on duty at the Naval Station, Sangley Point, Philippines, recently delivered a series of lectures on endodontics before the faculty and junior class of the Dental College of the University of the East in Manila. The lectures included bio-mechanical preparation and filling of the root canal, surgical considerations, and the Navy Dental Corps film, Endodontics, along with a discussion of case diagnosis and selection.

Research Meeting at Great Lakes. On 20 April 1961, approximately 100 members of the Chicago and Milwaukee Section of the International Association for Dental Research were guests of the U. S. Naval Training Center, Great Lakes, Ill., for their association meeting. The meeting, held at the Commissioned Officers Club, was preceded by a visit to the Dental Research Facility where CAPT G. L. Parke, Senior Dental Officer of the Facility, outlined its history and mission. Papers presented during the scientific portion of the meeting

were: A Clinical Evaluation of Temporary Restorative Materials, CAPT R. B. Wolcott; PH Changes and Infra-Red Absorbance of Saliva, CDR M. A. Mazzarella; and Changes Accompanying Restorations with Temporary Materials, Dr. I. L. Shklair (Bacteriologist).

CAPT Lesney Appears as Essayist. CAPT Theodore A. Lesney DC USN, Diplomate, American Board of Oral Surgery and Chief of Dental Service, U. S. Naval Hospital, Great Lakes, Ill., appeared at the Southeastern Society of Oral Surgeons in Miami, Fla., 27-30 April 1961, as the leading essayist and clinician.

CAPT Flocken at Virginia Meeting. CAPT John E. Flocken DC USN, Naval Dental School, presented a lecture—Orthodontics for the General Practitioner—before the Virginia Tidewater Dental Association on 29 March 1961 at Virginia Beach.

RADM Pollard Commends MSC Officers. LT Robert V. L'Italien and LT(jg) Langston E. Richardson, Jr. MSC USN, Naval Dental School, were recently commended by RADM E. G. V. Pollard DC USN, Director of Dental Activities, Fifth Naval District, and former Commanding Officer of the Naval Dental School.

LT L'Italien's commendation read in part: ". . . Your devotion to duty, loyalty, and sound judgment aided materially in successfully accomplishing the mission of the U. S. Naval Dental School. Your linguistic ability repeatedly enabled matters involving various foreign nationals to be solved with ease."

LT(jg) Richardson's commendation read in part: ". . . you performed your duties as Administrative Procedures Coordinator in a highly outstanding manner. Your unswerving loyalty, application to duty, and sincere interest in the welfare of those subordinate to you has been an inspiring example to all whom observed you."

CAPT Crawford Retires. CAPT Merritt J. Crawford DC USN, was placed on the Retired List of the Navy on 1 April 1961 after 30 years of service. CAPT Crawford was born in Practarville, Ohio, and graduated from School of Dentistry, University of Louisville, Louisville, Ky. He was commissioned Lt(jg) in the Dental Corps in July 1932 and reported to the U. S. Naval Hospital, League Island, Pa., for his first tour of active duty. CAPT Crawford served as Executive Officer of the U. S. Naval Dental School from September 1945 to January 1950. Among his other duty assignments he served on the USS AUGUSTA and as the Senior Dental Officer at the U. S. Naval Training Centers, San Diego, and Great Lakes. Prior to his retirement, he was the Senior Dental Officer at the Naval Shipyard, Mare Island, Calif.

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RESERVE



SECTION

Questions and Answers
(Continued from last issue)

Q. What is the retirement income at age 60 for each officer grade predicated upon 3 years of active duty and 17 years of satisfactory Federal service?

A. The table below was computed upon basic pay of an officer of each grade with more than 20 but less than 22 years of service for pay purposes. Service for pay purposes in excess of 22 years will increase the retirement income. The pay for LCDR and above represents adjusted pay; enlisted time, if any, having been considered.

	over 4 yrs. enl. service	under 4 yrs. enl. service
ENS	\$54.00	\$42.39
LT(jg)	60.75	51.30
LT	72.23	70.88

LCDR	\$ 85.05
CDR	100.58
CAPT	116.10
RADM	158.63

Q. Is previous active naval service a prerequisite for membership in a Medical Company?

A. No.

Q. Are periods of active duty necessary for retention in a Medical Company?

A. No. However, members are

encouraged to take 14 days of active duty for training as often as possible.

Q. Does membership in a Medical Company increase the likelihood of recall to active duty in a partial mobilization?

A. No. Insofar as military requirements permit, priority for involuntary call to active duty among Ready Reservists is in the following categories:

- a. Those who do not qualify for any other category below.
- b. Those who served on active duty anytime during the period between 25 June 1950 and 31 January 1955 in the Army, Navy, Air Force, Marine Corps, Coast Guard, and Public Health Service.
- c. Those who served on active duty during the period between 7 December 1941 and 2 September 1945 in the Army, Navy, Air Force, Marine Corps, Coast Guard, Public Health Service; or during the periods between 1 September 1939 and 2 September 1945 in the Armed Forces of any country allied with the United States in World War II.
- d. Those who qualify for both b. and c. above.

Q. Are all lectures of the Medical Company training program of a military nature?

A. No. Training is principally through the medium of package curricula

developed at the direction of the Bureau by authorities in the particular field covered. The current curriculum is entitled "War Emergency Surgery." Medical Companies are not restricted to sole use of the package curricula but are permitted to schedule presentations by members on professional subjects of interest or by other available professional and military authorities.

Q. What is the Correspondence Course Training Program?

A. The Correspondence Course Training Program provides Naval Reserve Medical Department officers with the opportunity to broaden their knowledge in military and military-medical specialties through home study. Correspondence courses are especially suited to officers who reside in areas devoid of opportunities for active participation in Naval Reserve activities. A total of 60 courses are available for Medical Department officers for which retirement and promotion points are authorized for completion thereof. It is theoretically possible for an officer to meet all requirements for retirement and promotion solely by completion of correspondence courses. Each enrollee is provided with a question booklet (questions being of the objective, true-false, and matching type), answer sheet, and in most instances, reference and textbooks. Courses range from 2 to 12 assignments; one assignment per month is required to be submitted. Upon satisfactory completion, certification thereof is forwarded to the officer, with copies to his district commandant, BuMed, and to Reserve Officer Recording Activity, Omaha, Neb. Military type courses are requested from the USN Corre-

spondence Course Center, Naval Supply Depot, Scotia, N. Y., and medical courses from the Naval Medical School, National Naval Medical Center, Bethesda, Md. Pay is not authorized for completion of correspondence courses.

Q. If a member is called to active duty is promotion effected?

A. A general statement in this regard is impractical since each individual entitlement varies. However, a member will normally fall under one of the following categories:

a. If member has not received constructive service credit under PL 497-84th Congress promotion may result depending upon the promotional history of the candidate as a Reserve MC/DC officer. Constructive service credits as presently administered provide that each applicant will be appointed in the grade commensurate with his education, experience, and ability.

b. If a member was appointed on or after 1 July 1955 his constructive service credit has been granted and entitlement to higher grade may result only from a duly convened Staff Corps selection board, unless, in his initial appointment, he received less than the mandatory amount of constructive service credit authorized pursuant to the Reserve Officer Personnel Act of 1954. Upon review of this constructive service grant, promotion may result.

c. If a member has had active duty since 1 September 1955, his constructive service credit has been granted and entitlement to higher grade may result only from a duly convened Staff Corps selection board.

Q. Whom does one contact to join a Naval Reserve Medical Unit?

A. If it is known that a unit exists in a particular city, the commanding officer of the unit should be contacted. When there is no knowledge of the existence of a unit, the interested officer may make inquiry as to the existence of units to:

- a. Commanding Officer of a local Naval Reserve Training Center, or
- b. District Medical Officer of the naval district in which currently residing, or
- c. Chief, Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C. (Attention: Director, Reserve Division).

The addresses of the District Medical Officers are as follows (the Eighth District disestablished 31 July 1961):

FIRST Naval District 495 Summer Street Boston 10, Mass.	FIFTH Naval District Naval Base Norfolk 11, Va.	ELEVENTH Naval District 937 North Harbor Drive San Diego 30, Calif.
THIRD Naval District 90 Church Street New York 7, N.Y.	SIXTH Naval District U.S. Naval Base Charleston, S.C.	TWELFTH Naval District Federal Office Building San Francisco 2, Calif.
FOURTH Naval District Naval Base Philadelphia 12, Pa.	EIGHTH Naval District U.S. Naval Station New Orleans 12, La.	THIRTEENTH Naval District Seattle 15, Wash.
	NINTH Naval District Building 1 Great Lakes, Ill.	

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Retirement Points for Attendance
at AOA and AMA Meetings

The 64th Annual Congress of the American Optometric Association will be held at the Denver Hilton Hotel, Denver, Colo., 17-20 June 1961. A Military Program will be conducted on 18, 19, and 20 June. Eligible inactive Naval Reserve Medical Department officers may earn one retirement point credit for attendance at each day's session of the Military Program provided they register with the military representative present.

The Annual Meeting of the American Medical Association will be held at the Statler-Hilton Hotel, New York City, 26-30 June 1961. In conjunction with this meeting, a Military Symposium will be held at the Park Sheraton Hotel on 27, 28, and 29 June. Eligible inactive Naval Reserve Medical Department officers may earn retirement point credits for attendance provided they register with the military representative present.

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PREVENTIVE MEDICINE

Bacteriologic Factors in Hospital Sanitation

Ruth B. Kundsinn MD, Peter Bent Brigham Hospital, Boston, Mass.
 Bacteriological Factors in Hospital Sanitation Procedures, Modern
 Sanitation and Building Maintenance 12: 20-21, 49, August 1960

Every hospitalized patient has a right to an hygienic environment. This is a beautiful but meaningless philosophy. Unless this hygienic environment is described quantitatively, it has as many interpretations as there are people to devise them. What, for instance, makes a floor clean? Is it appearance, sheen, or lack of clutter? When does an environment become unhygienic? When is it a hazard to patient and hospital personnel?

Pathogenic organisms in a hospital environment come from two sources—overt infection and carriers. These bacteria have been traced as they travel from the human source onto laundry, clothing, air, floors, window ledges, and thence are spread throughout the hospital. The problem then resolves itself into stopping the spread of these organisms and eradicating or destroying them where they accumulate.

Floor Accumulation. The largest area for bacterial accumulation is the floor, whether it be in the operating room, ward, or corridor. Floor care must be scientific, not haphazard. Ordinary mop and pail technic

with any available soap has been found to be completely inadequate. With poor methods, bacterial counts actually increase as the floor washing progresses. Floor-flooding technics using germicidal detergents have been developed with the results that floors are left grossly as well as bacteriologically clean.

The most effective agents for floor-flooding are synthetic phenolics, iodophors, and quaternary ammonium compounds. All of these can, without difficulty, lower bacterial counts on floors to single digits per cm^2 . A standard which has been found of practical value for floors in operating suites is 5 or fewer organisms per cm^2 ; ward floors, 10 or fewer organisms per cm^2 . Higher counts after floor washing should not be tolerated.

Bacteriologic Monitoring. This is the only criterion by which the efficacy of cleaning method should be ascertained in a hospital. Constant monitoring not only will give reassurance that proper equipment and technics are being utilized for cleaning, but also will reveal problems

as they arise.

Despite careful cleaning in one operating room, reported high counts were persistent. Investigation disclosed that the operating table was bolted down and it was impossible to clean under it. The table was moved; all manner of debris floating in a green slime was revealed. Once this was cleaned and instructions were left for moving the table each time the floor was flooded, counts became acceptable.

What are hospital procedures which project organisms into the air and eventually onto the floor? In order to study this, air studies were made over long periods of time in a ward. Volume air samples of bacteria in suspension during normal ward activity were taken by means of the Wells air centrifuge. Activity such as bed-making and dry mopping served to increase the bacteria-carrying particles in the air. Which patient's bed was being made could be identified by the air bacteriology. Thus, a patient shedding a particular phage type of *Staphylococcus aureus* contaminates his linen so heavily that any handling of the laundry releases these organisms into the ward air.

These observations of air bacteriology and how it varies with activity led to further study of those procedures which contribute most bacteria to the environment. In addition to volume air samples, settling plates can be used to determine bacterial fall-out.

Pulling the laundry from laundry chutes results in a tenfold increase in the bacterial population of the air. Emptying rubbish also results in doubling the fall-out as well as air-suspended organisms. Apparently, rub-

bish is not quite so heavily contaminated as the laundry!

The rubbish problem can be solved by lining rubbish cans with plastic (or paper) liners, which can be tied and completely lifted out of the container and brought to the incinerator.

Making Textiles Safe. A germicidal textile lubricant may be added to the last rinse in the laundering of all hospital linen. This highly substantive rinse lubricates the fibers in the textile so that they glide over one another and do not break off to form lint and dust. The rinse also leaves a bacteriostatic residue which inhibits proliferation of bacteria in most linen. Bacteria landing on the fibers in the wet state will be destroyed. Blankets are particularly suspect; because of the nature of woolen fibers, they are seldom exposed to temperatures which are bactericidal. For this reason, germicides must be used as a soak preliminary to washing.

A standard which has been found for clean blankets and linen is 20 or fewer organisms per square foot with no *Staphylococcus aureus*. These cultures are done by simply impressing the textile against a blood agar plate by means of a sterile flask.

Air conditioners have coils and humidifying chambers which are excellent areas for bacterial multiplication. Bactericidal agents should be incorporated into their maintenance. Recirculating air is a hazard as demonstrated in an experiment in a new wing of a hospital with laboratories and offices on two floors. Spraying of *Escherichia coli* in a second floor laboratory resulted in immediate recovery of these organisms in a first-floor laboratory and

in every office served by the air conditioner.

The best method for evaluation of ward or operating room cleanliness is by volume air, settling plate, and floor cultures combined. Good floor care and good technics in bedmaking and housekeeping will be reflected in the number of organisms suspended in the air and settling out on exposed blood agar plates.

Standards of Cleanliness. An hygienic environment can be described by its bacteriology. This is the only valid criterion for cleanliness. There are no official standards, however the following standards are found to be most useful in evaluating cleanliness in all hospital areas:

Floor Cultures

Operating room: 5 or fewer organisms/cm².

Ward: 10 or fewer organisms/cm².

Furniture

Sterile; no pathogens.

Air

Operating Room: 5 or fewer organisms/ft³.

Ward: 20 or fewer organisms/ft³; no pathogen.

Fall-Out

Operating Room: 5 or fewer organisms/ft².

Ward: 20 or fewer organisms/ft²/min; no pathogens.

Bedside Water

Same standards as water supply.

Linen and Blankets

20 or fewer organisms/ft².

Soap

Sterile.

Cleanliness is no longer a philosophy; it is a scientific concept that can be defined by quantitative bacteriology. In this kind of cleanliness, only, lies our salvation from hospital infections.

* * * * *

The Riddle of Infectious Mononucleosis

Leading Article, Brit Med J, Vol I, No. 5219: 111-112, 14 January 1961.

The clinical features of "glandular fever" were described by Pfeiffer in 1889, but a long period of confusion about its differentiation followed. During the last 20 years, accumulated clinical, epidemiologic, and laboratory data have added complexities to the picture, chiefly perhaps because of the failure to identify an etiologic agent. In modern usage the disease is now known as infectious mononucle-

osis, but in a recent important field study, this term has been avoided as "possibly misleading." The over-all incidence appears to be increasing. An analysis of 1779 cases admitted to a hospital in Stockholm during the period 1940-57 showed that there had been a 6-fold rise in the number of cases and a 4.4-fold rise in relation to the population. Though better diagnosis might have had some influ-

ence, this was negligible in the last 15 years during which an unbroken rise had occurred.

Though the disease is of low infectivity, many outbreaks have been reported, especially in colleges and institutions. A virus is generally assumed to be the cause, but all attempts to cultivate it from patients, either in chick embryos or in tissue cultures of many forms, have failed. Although the disease is said to have been transmitted to a volunteer, in one out of 5 attempts all transmission experiments in the laboratory have been uniformly unsuccessful. The postulated virus, perhaps like that of the common cold, must require highly specialized conditions for its growth in vitro.

H. A. Reimann (*Arch Int Med*, 105: 779, 1960) recently introduced the idea of a "spectrum bar" for each infectious disease to denote the proportions of the various grades of severity—from inapparent infection to fatal cases—met with at any given time and place. As in many infections, the spectrum of infectious mononucleosis contains a high proportion of mild or even abortive cases. These have usually a short (4-18 days) incubation period and may appear in outbreaks; a high proportion of the cases are children, while males in all age groups are preponderant. Patients may present mild fever, slightly enlarged posterior cervical or other glands, and perhaps, a slight sore throat. The disease can not be diagnosed without a white blood count which shows lymphocytosis and presence of the characteristic abnormal lymphocytes or monocytes. The Paul-Bunnell (P. B.) test for heterophile antibody in the blood serum is

frequently negative. There are other P. B. -negative or low-titer cases which may not be so mild and may have a rash—generally of rubelliform type but lasting longer (about 5 days). This composite group of P. B. -negative or low-titer cases has been considered by many authors to represent a different disease from that of the well-marked P. B. -positive cases. The latter is usually more severe, with extensive adenopathy, angina, sometimes with tonsillar exudate as in diphtheria, and some grades of hepatitis. These are usually sporadic cases in adults, and in the 15-19 age group there is a preponderance of females. If there is a known contact, the incubation period may apparently be as long as 2-3 months. With these clinical and epidemiologic distinctions broadly between P. B. -negative and P. B. -positive groups, the idea that infectious mononucleosis is not one but two diseases has gained much acceptance during the last 5 years.

A recent contribution by A. S. Evans (*Amer J Hyg* 71:342, 1960) goes a stage further, and suggests that the disease may exist in 3 phases: (1) primary abortive phase characteristic of childhood infections and with an epidemic tendency; (2) intermediate viremic phase with a tendency to rashes, and with heterophile antibody not yet detectable or of low titer; and (3) phase of tissue reaction to virus multiplication in secondary sites, characteristically in young adults, with an apparently long incubation period (perhaps because of missed diagnosis in the earlier stages) and strongly positive P. B. reaction. Phase 3 may be associated with the severe complications reported increasingly in recent

years, such as hemolytic anemia, thrombocytopenic purpura, and the Guillain-Barré syndrome of symmetrical bilateral polyneuritis. Such complications of an allergic type are now widely suspected of being examples of auto-immune disease, whereby abnormal antigens—foreign to the body—may be formed from denatured proteins by virus or other action, with resulting production of antibodies in or on particular organs or tissues. The consequent auto-immune reaction at these sites pro-

duces localized damage to the organ or tissue concerned. In the case of infectious mononucleosis it might conceivably be abnormal antibodies that are produced by the abnormal but "immunologically competent" cells of the lymphocyte series. Limited duration of the allergic complications could fit in with such a view. Is infectious mononucleosis, then, a composite disease with both an infectious stage and a potential or actual auto-immune phase?

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Monographs on Infectious and Tropical Diseases

In 1956, for the purpose of providing medical officers with professional information—primarily in the fields of infectious and tropical diseases—which would be concise, current, authoritative and in ready reference form, a series of monographs was initiated. These clinical discussions, each issue to be a comprehensive presentation of a single disease, were established as publications for the Armed Forces, to be identified within the Navy as The Technical Information Manual for Medical Corps Officers, NAVMED P-5052 series. The series was conceived to include—but not be limited to—triservice (Army-Navy-Air Force) publications, some of which were already established Army Technical Bulletins (TB MEDs) and Air Force Pamphlets (AFPs). To this time, 18 such monographs have been prepared and are in use.

The authoritative stature of these publications is evidenced by the fact that preparation and/or review of each monograph is by a panel of distin-

guished and internationally recognized civilian physicians and professors of medicine comprising one of the Commissions of the Armed Forces Epidemiological Board. Each Commission focuses on a specific problem, such as respiratory disease, influenza, streptococcal disease, enteric infections, parasitic diseases, et cetera. As professional information develops, changes and revisions are made to maintain the current status of the discussion.

A complete listing and description of all chapters in this series—as well as other publications of the Medical Department of the Navy—and procedures for procurement are contained in the list of current publications, BUMED INSTRUCTION 5604.1C, 29 April 1960 (presently being revised for distribution in the near future). This directive, like all other directives of the Bureau of Medicine and Surgery as well as pertinent directives of other Bureaus, is available in the Administrative Office of each local

command, or Medical Department of the command.

Initial distribution of the binder and available chapters of the Technical Information Manual for Medical Corps Officers has been to ships and stations having Medical Corps officers regularly assigned. Periodic page changes or revisions are distributed in the same manner. If the Manual is not available—or complete—at all indicated facilities, steps should be taken to insure that the Manual, with all available chapters as modified by current changes, is made available for ready reference. These publications may be requisitioned from appropriate forms and publications cognizance "I" supply distribution points in accordance with current directives.

Chapters in the 5052 series already published and distributed—and described in BUMED INSTRUCTION 5604.1C—are:

- 1 Filariasis (Wuchereria), with Special Reference to Early Stages
- 2A Poliomyelitis
- 3 Epidemic (Louse-Borne) Typhus
- 4 not published
- 5 The Etiology, Prevention, Diagnosis, and Treatment of Adverse effects of heat.
- 6 Schistosomiasis (with emphasis on schistosomiasis japonica)
- 7 Amebiasis
- 8 Coccidioidomycosis
- 9 Antibiotic Therapy
- 10 Malaria (Clinical Features, Treatment, Control and Prevention)
- 11 Treatment and Management of Venereal Disease

- 12 Q Fever
- 13 The Management of Pulmonary Tuberculosis
- 14 Viral Infections of the Central Nervous System
- 15 Immunization

Later chapters, already distributed, which will be listed and described in the revision of the Instruction are as follows; others may be expected from time to time.

-16 Staphylococcus, Prevention of Hospital Infection, explains the hazards of hospital acquired infections—especially those caused by staphylococci—and establishes guides which may be used to reduce or eliminate such infections.

-17 Treatment and Prevention of Streptococcal Disease and its Sequelae, provides the latest pertinent information regarding treatment, prevention and sequelae of streptococcal infections of the upper respiratory tract.

-18 Plague, provides the etiology and transmission, geographic distribution, clinical features, diagnosis, treatment, isolation and quarantine measures, and prevention and control of the disease. It also provides a description of sylvatic plague, its source and control measures.

-19 Tularemia, provides definition, etiology, epidemiology and geographic distribution, transmission and initial clinical features, pathogenesis and pathology, clinical features of the developed disease, laboratory findings, differential diagnosis, treatment, prognosis, immunity, and preventive measures of this animal borne disease.

Histoplasmosis in Construction Crew

Dr. J. W. Skaggs, public health veterinarian of the Kentucky State Health Department, reports that on 3 October 1960, a crew of 7 workmen began a reconstruction project on a watertower on the roof of a laundry in downtown Lexington. Before actual repairs could be started an accumulation of 2 to 3 feet of pigeon droppings had to be removed from a pit beneath the watertower. This was accomplished by each workman taking turns at climbing into the pit and shoveling the droppings into buckets which were then hoisted out of the pit and dumped. Considerable dust was created by this activity, and no face masks were worn by the workmen. During this process numerous squabs were caught and taken home to be eaten.

Four days after the original exposure to this environment one of the workmen became ill with chills and "generalized aches." On 9 October a second workman developed symptoms of chills, severe headache, and chest pain. By 12 October the remaining 5 had onsets of similar symptoms. Severe intractable headache was the predominate symptom described by all.

All 7 were admitted to the same hospital on the same day under the care of the same physician with the clinical diagnosis, acute ornithosis. On admission, temperatures ranged up to 104 F, and increased lung sounds were noted on auscultation. Additional signs and symptoms included myalgia, anorexia, nausea, vomiting, dry nonproductive cough, and definite decrease in vital capacity. Treatment consisted of symptomatic medication for relief of pain and tetracy-

cline therapy with high dose levels. There was an apparent response in each of the patients within 24 hours of the time of hospitalization but they remained hospitalized for two weeks.

The radiologist's report on each man was as follows: "Examination of the chest done at bedside shows small punctate bronchiopneumonia throughout both lung fields which could be compatible with the lung findings of clinically described ornithosis." There was no evidence of leukocytosis, leukopenia, anemia or any significant deviation from normal urinalysis. However, each patient demonstrated an increase in sedimentation rate. Only two patients showed sensitivity to histoplasmin administered intradermally on 17 October. Diagnostic specimens collected from each patient included throat washings, sputum, and acute and convalescent blood serum.

Attempts to confirm the diagnosis of ornithosis in the patients by virologic and serologic means were negative. However, diagnostic rises in antibody titer to histoplasmin—4-fold or greater—were demonstrated, thus establishing the diagnosis of histoplasmosis.

Seven pigeons were trapped in the vicinity of the watertower and submitted to the Communicable Disease Center for viral studies. A sample of pigeon droppings was collected and cultured for pathogenic fungi at the Kentucky State Department of Health. Two of the seven pigeons harbored ornithosis virus, whereas cultures of the droppings were negative for fungi.

One of the most interesting facets

in regard to this incident lies in the fact that these seven adult patients were born and reared in an area known to be highly endemic for histoplasmosis and in which 80 to 90% of the adult population demonstrates previous experience with the agent by histoplasmin sensitivity testing. Apparently the exposure in this particular incidence was so overwhelming that any immunity derived from pre-

vious exposures was not effective in preventing reinfection. Also, it is of interest to note that one patient had calcified lung lesions and a history suggestive of a previous episode of clinical histoplasmosis. (Veterinary Public Health Newsletter, Bureau of State Services, Communicable Disease Center, Atlanta, Ga., PHS, DHEW, February 1961)

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Plague in 1960

Judging from the number of deaths officially ascribed to plague, the incidence has been steadily decreasing, as may be gathered from the following approximate yearly averages:

	<u>Deaths</u>
1919-28	170,300
1929-38	92,300
1939-48	21,800
1949-53	4,600
1954-58	less than 200

In 1959, the number of deaths recorded in 10 countries of Africa, America, and Asia (excluding continental China) did not exceed 83 (preliminary figure). In 1960, there were only 65 (preliminary figure).

The number of cases recorded during the past years—which is no doubt less indicative—has shown a similar trend. In 1958 and 1959 it was less than 300. In 1960, the nearly complete figures available at present are only slightly higher (369). Almost all of them refer to isolated cases or to small epidemic outbreaks which occurred in the interior, not one port open to international traffic being affected.

Presence of plague in wild or domestic rodents was reported during 1960. In January it was reported in Aragua State, Venezuela; in September in the Kivu Province of Congo (Capital Leopoldville), and in the Central Province of Kenya (1 suspected case); and in November in Rangoon, Burma. In spite of an epizootic in rodents, no human cases were reported in this port.

Africa: On the African continent, the same as in the 2 preceding years, cases of plague occurred in the Central Province of Kenya and in the Blukwa area, Orientale Province, Congo. A few cases were recorded also in Kivu Province (reports for this country are incomplete). In Madagascar, a few cases have been reported not only on the central plateau, as usual, but also in Majunga Province. There has been 1 isolated case in the Union of South Africa.

America: Bolivia, which had been spared for years, reported a small epidemic outbreak at Pucar (Santa Cruz Department). In Brazil, the disease appeared in Alagoas State and a few cases in Bahia State. In Ecu-

dor, a total of 79 cases were reported, distributed in Chimborazo, Loja, El Oro, and Tungurahua Provinces. Peru (total 128 cases, of which 106 were in Huancabamba Province) reported the largest number of cases in any one country. In the United States, 2 isolated cases were reported in New Mexico.

Asia: Burma reported 18 cases (as against 108 in 1959), of which 6 were in Sagaing Division and 7 in Shan State. India (Madras and Mysore States) reported 63 cases compared

to 33 in 1959 in the same States and in Himachal Pradesh State. Indonesia (Djawa Tengah Province) had 5 cases. South Vietnam, two villages on the southeastern coast, reported 14 cases; no manifestation of the disease had been reported in this country during the preceding year. Cambodia and Iran have remained free; the former for the third consecutive year, the latter since 1959. No data are available for continental China. (WHO, Weekly Epidemiological Record, No. 8, 3 March 1961)

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Burns from Yutampos

Skin contact with a yutampo—a foot warmer used in bed by the Japanese—leaves a burn which can result in a long period of hospitalization. Many Navy and Marine Corps personnel have been admitted to hospitals in Japan or to sickbays of ships stationed in Japanese harbors because of burns from these devices. The average length of hospitalization for these cases—according to a recent analysis—was 27 days. The chief interest of the Navy Medical Department, in addition to stressing early and efficacious treatment of the burns, is an educational program in the preventive aspects of the injury.

The burn is caused by an extended period of contact with the yutampo, which may be described as a thin-tin, chinaware, metallic, or earthenware hot-water bottle used to warm a bed or other area. A cover or some

cloth wrapping, such as a towel, is used to prevent direct contact and resulting burns. Since the burns are usually deep, it is assumed that the patient would have moved away from the heat if sensation had been functioning normally. Therefore, alcoholic intoxication is presumed to be the predisposing cause in many of the cases.

In the study, burns—other than chemical and electric—caused an average of about 18 sick days per case in the Navy; but, as stated above, burns from yutampo were responsible for an average of 27 days per case. The sick days for these unusual cases ranged from 1 to 95 days per case. Nearly 90% of these burns were 3rd degree in depth and almost all were on the lower extremities; multiple sites were infrequently encountered. Nearly 60% of the cases had surgery—almost exclusively skin grafting.

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Brucellosis Surveillance - 1960

The reported number of human brucellosis cases continued to decline in 1960 as it has for the past 14 years. Preliminary data in 1959 included 721 cases but the final tabulation was 892 cases. The 1960 preliminary report of 741 is slightly higher than the 1959 preliminary reports; this would be the first increase in human infection in 15 years.

The decline in incidence has been dramatic since 1947 when 6321 human cases were reported to the National Office of Vital Statistics. The states having the highest incidence of disease in 1960 were: Iowa 307; Illinois 73; Kansas 52; Virginia 33; California 27; South Dakota 26; Texas 22; and Nebraska 20 cases. These 8 states reported 75% of the cases in the nation. The Iowa State Health Department's Public Health Veterinarian reported that there was a large epidemic among 1500 employees of a swine slaughtering plant in the State of Iowa, beginning late in 1959 and extending into the first half of 1960. This ac-

counted for 41% of the country's cases and was the largest epidemic to be reported in recent years—128 clinical cases. There were decreases in incidence in 22 states with the largest decreases over the previous year being noted in Georgia, Iowa, and Kansas.

Epidemiologic reports indicate that most of the human infections in 1960 were due to occupational exposure while the decline of human brucellosis, attributed to milk or milk products or cattle contact, is testimony to the successful efforts of the states and Federal Government to eliminate bovine brucellosis. The main source of human infection now is swine, both in the packing house and on the farm. The control and elimination of human brucellosis is dependent on the eradication of the disease in swine, otherwise human brucellosis may be increasing in the future. (Abstract: DHEW PHS Veterinary Public Health Newsletter, March 1961)

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