NavMed 369

UNITED STATES NAVY

MEDICAL NEWS LETTER

Editor - Captain F. W. Farrar, MC, USN

Vol. 13 Friday, 20 May 1949 No. 10

SPECIAL NOTICE

ALL MEDICAL OFFICERS

The Secretary of Defense has directed that 100 naval medical officers be assigned on a temporary basis to duty in facilities of the United States Air Force. Officers so assigned will not be commissioned in the Air Force but will serve therein as naval medical officers and continue to wear the uniform of the United States Navy. Therefore, for all purposes (selection for promotion, longevity, retirement, etc.) this duty counts the same as any other Navy duty. It is contemplated that if applicants are not already qualified as flight surgeons or aviation medical examiners, they will be instructed at Randolph Field for four weeks in the technic of aviation examination. Flight surgeons or aviation medical examiners detailed with the Air Force in accordance with this directive may be assigned duty involving flying and will thereby be eligible to draw the added compensation incident to such type of service.

Duty assignments will be at United States Air Force facilities within the continental United States unless the applicants specifically request overseas duty. Dependents may accompany medical officers to overseas stations subject to availability of housing. Government quarters are available at a large number of United States Air Force

facilities. The U. S. Air Force assures that Navy medical officers will be given priority consideration for assignment to quarters if available at station of duty.

Applications for this duty are desired from medical officers of the Navy in all categories (active USN, active and inactive USNR, and retired USN and USNR) and may be made by letter, telegram, or dispatch to the Bureau of Naval Personnel, Pers 311F, Navy Department, Washington, D. C., marked for information to the Bureau of Medicine and Surgery, and must reach the Navy Department by 15 June 1949. In the cases of inactive USNR, retired USNR, and retired USN, applications should be made via or information copy to the commandant of the naval district concerned. The attention of medical officers of the United States Naval Reserve is invited to the fact that application for this duty for a minimum period of one year will entitle them to the added compensation of 100 dollars per month authorized by Public Law 365 - 80th Congress. Officers must be available for assignment to the Air Force prior to 31 July 1949. The maximum tour of duty will be 2 years.

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Treatment in Heart Failure: More than half of all patients with heart disease will have heart failure during their lifetime. With the first evidence of heart failure treatment should be planned on a long-term basis. Most patients can be helped to lead useful lives in the presence of heart failure, often for many years.

The measures used in the treatment of patients with heart failure are designed to reduce the metabolic load on the heart or to increase the heart output. In the first category are rest, control of fever or infection, and specific treatment for hyperthyroidism, beriberi or anemia. The second category includes digitalis, which by direct action on heart muscle and indirect action on venous pressure increases cardiac output, and the diuretics, the effects of which on sodium excretion reduce blood volume and venous pressure. It is important to understand that when the metabolic load on the heart is excessive, as in hyperthyroidism, measures designed to increase the cardiac output further, such as the use of digitalis, are most often ineffective unless consideration is given the metabolic disorder which has caused the heart failure.

The effects of rest on the normal heart are to decrease the demands of the body for oxygen, to reduce the heart rate and to increase the flow of blood through the kidneys. These same effects are noted in the failing heart and sometimes without any other treatment patients will have great relief of the cardiac failure symptoms by rest alone. Diuresis will follow the increase in renal blood flow with a consequent reduction in blood volume and venous pressure.

Rest should be mental as well as physical. Patients who are put to bed because of early heart failure should be permitted time to arrange their business affairs, in order to avoid mental strain during their enforced inactivity. When patients have much dyspnea and pulmonary congestion it is wiser to have them rest in a comfortable chair and even sleep in the chair if necessary. In recumbency there is a marked shift of blood from the venous channels in the extremities to the lungs, with increase in pulmonary congestion. It is best to have the head of the bed raised when a patient with heart failure is bedridden. It is also wise to raise the foot of the bed a little so that the patient does not slide down and by bending the neck increase the difficulty in breathing. Use of the commode may require less exertion than use of the bedpan.

Rest should be ordered as a temporary measure. The patient will understand how reducing the work of the heart by rest will help him to restore heart function and in the end lose less time from work. In the beginning visitors should be restricted, but listening to the radio may be permitted for diversion. Rest should not be prolonged beyond the point necessary to relieve the most disturbing clinical symptoms of failure or to insure recovery from the disease which may have induced the heart failure, such as cardiac infarction. Prolonged rest brings with it the dangers of venous thrombosis in the extremities and of pneumonia.

After the patient has had an initial period of rest in bed and is able to carry on restricted activity without symptoms of failure he may be permitted to return to work. At this point it will be necessary to decide whether a change of vocation is necessary or whether it is possible for the patient to carry on in his usual business or profession with some restriction in activity. This is a difficult decision to make and many factors must be considered. Of most importance are the cause of the heart failure, the natural history of the underlying heart disease, and the ability of the patient to carry on a life of restricted activity. A man should not be told to give up his profession or business because of an attack of nocturnal dyspnea due to hypertensive heart disease or the signs of early heart failure which is often seen in the fourth decade of life in healed rheumatic heart disease. Neither should a patient with heart failure which follows a first bout of cardiac infarction be encouraged to undertake new business ventures or to continue in those which require more than a moderate amount of exertion.

When a patient is permitted to return to work he should be told to avoid, for a considerable period, all exertion not essential to his earning a living. Evenings should be spent at home. He should retire early and arrange to have twelve hours of rest in each day whenever possible. The goal should be rest for the heart and reduction in metabolic needs, but the personality of the patient must not be overlooked in planning the regimen.

When cyanosis is present as a result of lowered oxygen saturation of arterial blood then oxygen therapy may be helpful in relieving dyspnea and at times may cause diuresis. In the absence of cyanosis, however, the author has not seen much benefit from oxygen therapy in heart failure.

Diet has attained a place of importance equal to that of digitalis and mercurials. It is most often the factor which makes for success or failure in treatment. The purpose of dietary treatment in heart failure is to reduce the metabolic requirements of the body and to increase the output of the heart, if possible. The reduction in basal metabolic rate can be achieved by a semi-starvation diet. As a result of this reduction, there is less work for the heart, and the heart rate is slowed. Weight reduction is advisable in most patients as a further means of reducing metabolic demands. The Karell diet which consists of 250 cc. of milk at 8:00 a.m., 12:00 noon, 4:00 p.m., and 8:00 p.m. has been found to be ideal for this purpose. It is easily taken, rarely causes digestive disturbances, contains very little sodium and is low in calories and protein. It is taken by most patients without complaint at the beginning of treatment for heart failure. It may be given for from three to five days and then replaced by a modified Karell diet or a low sodium maintenance diet (see following page).

In the presence of reduced renal blood flow in heart failure, the extreme reduction of sodium in the maintenance diet will cause absorption of much less

sodium and water by the intact renal tubules. As a consequence, the circulating blood volume and venous pressure will be reduced.

MODIFIED KARELL DIET

8:00 A.M.	12 Noon	4:00 P.M.	8:00 P.M.
Fruit juice Salt-free bread with sweet butter 250 cc. milk	Baked potato Stewed fruit Salt-free bread with sweet butter 250 cc. milk	Stewed fruit 250 cc. milk	Cream of rice cerea or Rice cereal Stewed fruit 250 cc. milk

Coffee or tea may be added to the milk if desired.

MONTEFIORE HOSPITAL LOW-SODIUM DIET (500 MG. OF SODIUM)

FOODS ALLOWED:

Soup: Vegetable, cream soups made with dialyzed milk

Meats: Beef, lamb,* mutton,* calves' liver,* pork, veal, chicken, duck, turkey (preferably breast meat)

Dairy Products: Pot cheese and cottage cheese (to be washed three or four times in hot water before using)
Whole milk: ½ cup daily, or dialyzed milk ad libitum
Cream: Sweet cream 2 oz. daily (¼ cup)

Eggs: One a day (or two, if one is substituted for a serving of meat or cheese)

Vegetables (fresh only): Asparagus, green beans, broccoli, cabbage (raw), cauliflower, corn, cucumbers, eggplant, peas, white potato, sweet potato, tomato, yellow turnip, endive, fresh lima beans, brussel sprouts, green peppers, all kinds of squash, carrots

Breads: Salt-poor white bread, Passover matzoth

Cereals: Rice, puffed rice, cream of wheat, shredded wheat, puffed wheat, rolled oats, wheatena, tapioca, Mead's cereal, Ralstons, pearl barley, macaroni, spaghetti

Desserts: Fruits—apples, apricots, bananas, blackberries, blueberries, cherries, cranberries, dates, fresh figs, grapejuice, grapes, grapefruit, lemons, oranges, peaches, pears, pineapple, plums, raspberries, strawberries, watermelon, cider, fresh currants, huckleberries, rhubarb, prunes, tangerines; tapioca and rice pudding (made with dialyzed milk); gelatin made with water and fruit juice

Beverages: Tea, coffee, cocoa, tomato juice without added salt, fruit juices

Miscellaneous: Sweet butter; jelly; fruit jam and marmalade; olive oil and other vegetable oils and shortenings; white and light brown sugar; maple syrup; nuts (raw or plain roasted) —chestnuts, pecans, almonds, brazil nuts, cashew nuts, peanuts, hazelnuts, walnuts; unsweetened chocolate

* Indicates once weekly.

The low sodium diet is not entirely free from danger, although the author has seen very little harm come from its use. After long adherence to this diet patients may become weak and easily fatigued. Relief is obtained by the addition of sodium to the diet. Uremia may develop in patients with impaired renal function as the result of very low sodium diet. Such patients require special care and observation. Water intake need not be limited if salt intake is restricted.

If patients are very hungry on the Karell diet, an additional pint of milk may be added. Additional water may be taken as desired.

When a salt-free diet is prescribed, it is necessary to specify precisely what a patient may eat. Diets taken by patients without precise directions usually contain much more sodium than is desired.

It is established that digitalis acts to increase the force of contraction of mammalian heart muscle in failure. Many workers believe that this increase in the force of contraction is sufficient to explain the rise in cardiac output and all the benefits to the circulation which follow this augmented output. Others believe that the principal action of digitalis is to lower the venous pressure and that with a drop in venous pressure during heart failure a rise in cardiac output occurs and all the benefits to the circulation follow.

Digitalis also slows the heart rate by an increase in vagal tone and by direct effect on the conduction system. The slowing of the ventricular rate in auricular fibrillation and the occurrence of heart block from digitalis action are the best known effects of the drug. It can readily be seen that a reduction in ventricular rate allows for a longer period of diastole in each contraction, more rest for the heart muscle, and a better diastolic filling of the coronary vessels. This increases the efficiency of the heart muscle.

Digitalis is effective also in the treatment of heart failure with regular rhythm. The slowing of the heart is less evident, especially when the rapid heart rate is due to some cause other than the heart failure, such as fever or infection. When the rapid regular rate is due to the failure itself, then a slowing of the rate may be expected. The slowing is more evident and more salutary in patients with auricular fibrillation. The effectiveness of digitalis in cardiac failure seems to diminish with the passing of time. Its most brilliant effects are seen in early heart failure. When the heart muscle becomes altered physically and chemically by long-standing failure, it is less responsive to the effects of digitalis. The same lack of response to digitalis is seen in the failure of acute rheumatic fever when the heart muscle is severely damaged.

Diuretics can nearly always be used to tide the patient over any period when toxic symptoms of digitalis appear. It is the author's experience that during the past few years more patients have had to be treated for digitalis poisoning than ever before. This is due to the fact that the very potent glycosides are in more general use and that there is still no agreement on dosage.

The author prefers the use of the pure glycosides. They are less irritating to the stomach than the whole leaf, and can be taken without discomfort by nearly all patients. Digitoxin is absorbed completely from the stomach and exerts its full effect in from 6 to 10 hours. Cedilanid and digoxin are absorbed much less completely, but have a shorter latent period of action and are excreted more rapidly than digitoxin. For very rapid action in rare instances it is necessary to inject strophanthin K or ouabain intravenously. The author has found digitoxin best for producing initial digitalis effect and either cedilanid or digoxin best for maintenance.

The retention of sodium and water in heart failure is responsible for edema which may be present in the lungs or in any tissue in which the tissue pressure is low enough to permit accumulation of fluid. The removal of this fluid by diuresis causes a reduction in blood volume and venous pressure with relief of symptoms caused by venous congestion. The most effective diuretics are the salts of mercury. Mercury acts by reducing the power of the renal tubules to absorb sodium and water. Aminophylline is an effective diuretic which may be used to increase the effect of mercury. When given by vein or in a rectal suppository it increases the renal blood flow. Ammonium chloride may also be used in doses of from 6 to 8 grams daily to enhance the effect of mercury.

After an effective diuresis by mercury alone, or in combination with aminophylline or ammonium chloride, there is striking relief of congestion in the lungs with lessening of dyspnea and cardiac asthma. The engorgement of the liver and viscera is reduced and ascites often disappears without paracentesis. Resorption of pleural effusion resulting from the use of mercurial diuretics has been reported. The author has seen much relief obtained by injection of mercurial compounds in severe failure of acute rheumatic fever and also in heart failure after cardiac infarction. He shares the opinion expressed by Fishberg concerning the hazards of mercurial diuresis in the period following cardiac infarction, when shock dominates the clinical picture.

Mercury should not be given to patients who have edema caused by acute nephritis. It is also unwise to inject mercury in the presence of severe renal insufficiency from any cause. Renal shutdown may follow. It is well to remember that the diuretic effect of mercury is retarded somewhat by morphine and other drugs of similar action. The heavy albuminuria due to failure, however, is no contraindication to the use of mercury.

In the treatment of heart failure during the last decade mercury has replaced digitalis as the most effective agent. This is especially true in the treatment of heart failure of long duration. Whenever mercury is necessary as a diuretic it is most effective when given intravenously or intramuscularly. When given by vein mercury may cause severe reactions, and the deaths from mercury which the author has seen occurred after intravenous administration. Intramuscular injection made carefully is quite safe and effective and causes only slight pain. The author has had no experience with oral tablets. It is best to start with a dose of 0.5 cc. of any mercurial diuretic combined with theophylline for the first intramuscular injection. After this dose is found safe then from 1 to 2 cc. may be given daily if necessary to obtain relief of distressing pulmonary congestion. The author believes the need for rapid removal of pulmonary congestion is the principal indication for the use of mercury.

Since the author began use of a strict low sodium diet in his practice, he has had much less need to use mercury as a diuretic.

In the type of heart failure which is most common there is usually evidence of antecedent heart disease and an additional precipitating factor. If this factor is exertion, this must be controlled. If infection is present, treatment must be instituted immediately.

The dominant signs and symptoms may appear in the lungs only or in the liver and viscera, depending on the site of the principal damage to the heart. Thus, at the onset, in heart disease due to hypertension, coronary artery disease or syphilis, the picture of failure of the left side of the heart is dominant. In rheumatic mitral disease or cor pulmonale the picture of failure of the right side of the heart is in the forefront. With time this distinction is less evident, and the phenomena of increased venous pressure and edema are present both in the lungs and in the viscera. Rest, low sodium diet, and digitalis all act to increase the circulatory efficiency. In most of these patients no other treatment is necessary; certainly not at the beginning of heart failure.

There are acute episodes of heart failure which require somewhat different treatment. The most common of these is the episode of acute nocturnal dyspnea or pulmonary edema which is often seen in patients with hypertension. In such patients, after a small dose of morphine has allayed anxiety and there is no doubt about the diagnosis, a full digitalizing dose of a glycoside should be given, followed in the morning by a dose of 0.5 cc. of a mercurial. If there are no untoward effects from the mercurial then 1 cc. may be given the following morning if necessary. The patient should be put at rest, given a Karell diet for three days and his weight recorded. After this, a modified Karell diet or a sodium-free diet is given. The weight is recorded every day. Digoxin or cedilanid is given daily. When the patient has reached a stage in which there is no weight change, no dyspnea, no evidence of pulmonary congestion and no edema, the recorded weight may be considered to be the dry weight of the patient. An attempt should be made not to exceed this weight by more than a few pounds at any time. As soon as there is an appreciable weight increase the patient should take a Karell diet for three days with 2 grams of ammonium chloride three times a day. This usually suffices to bring the weight back to the dry weight. If not, a dose of 1 cc. of mercury will usually help. One of the author's patients with rheumatic heart disease and auricular fibrillation has followed this regimen for the past five years, keeping his weight between 115 and 118 pounds. He has not had to resort to mercury during this entire period, although before this regimen was started he had had a mercurial injection every week for a number of months.

It is not necessary to restrict water at any time during treatment, nor is it necessary to measure the intake and output of fluids. An accurate weight record is much less subject to error. It is necessary to have an accurate scale available at all times. Occasionally a slow gain in weight may mean actual gain in flesh and not edema fluid. In such cases the regimen described above to remove occult edema will usually cause very little loss in weight.

Most patients with chronic heart failure can be kept comfortable and many patients are restored to useful activity by the method of treatment outlined above. It is clear that the stress is laid on the maintenance of the dry weight by the use of a sodium-poor diet and digitalis, aided by periods of Karell diet and administration of ammonium chloride when there is a tendency for the weight to rise much above the dry weight. It should be pointed out that mercury is only rarely necessary. It is possible to accomplish the same by measures which are safer and easier to apply.

There is a group of patients with heart failure who do not respond well to the treatment outlined above. The most frequent examples are patients with hyperthyroidism and chronic cor pulmonale. Patients in this group have heart failure only after years of effort on the part of the heart to meet the much increased metabolic demand. In the author's experience patients with hyperthyroidism do not have heart failure before middle age. Almost always these patients have auricular fibrillation of long duration. The usual measures, including digitalis, have little or no effect on the control of heart failure unless the hyperthyroidism is treated. In patients with chronic cor pulmonale it is usually impossible to alter in any significant way the underlying pulmonary disease and the consequent ventilation insufficiency. For this reason, despite the best efforts, patients with cor pulmonale do not respond well to treatment when heart failure is present. In this group of patients the stress is laid on the removal, whenever possible, of the excessive demand on the heart. When this is accomplished, as in the operation for the obliteration of an arteriovenous shunt, the signs of heart failure disappear without any other treatment.

It has been pointed out that successful control of the clinical signs of heart failure does not necessarily mean a greatly improved circulation. Most patients require continuous treatment by limitation of activity, low sodium diet, and digitalis. Those patients whose heart failure is the result of some acute cardiac injury or excessive extracardiac demand may be able to resume normal living after recovery without further treatment. (M. Clin. North America, March '49, S. Biloon)

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Cough as a Symptom of Cardiovascular Disease: Cough is such a common complaint that it often attracts but little attention. This is particularly true when the cough is nonproductive and when there is no hoarseness, fever, or chest pain. It is easy to understand, therefore, how cough as a symptom may be neglected frequently in patients with cardiovascular disease in contrast to more definitive and impressive symptoms such as shortness of breath and chest or arm pain.

During the past 30 years sporadic reports have appeared with reference to cough as a symptom of heart disease. Blind and Picard speak of cough

associated with mitral valvular disease and Wertheimer has mentioned the cardiac cough, oftentimes spasmodic in character, as a symptom of the failing heart. Few reports in the american literature give reference to cough as a significant symptom in cardiovascular disease, although textbooks on heart disease mention it as a possible symptom of left ventricular failure, mitral stenosis, or aneurysm of the aorta. The fact that the cough may be an early and predominant symptom of cardiovascular disease has not been fully appreciated.

The cough may be chronic, spasmodic, or paroxysmal, depending upon the nature of the underlying cardiovascular disorder. Congestion of the lungs is undoubtedly the most frequent cause for the cough associated with heart disease, and the pulmonary congestion is usually due to left ventricular failure or mitral stenosis. It may be only after brief exertion that the patient notices the cough. At other times the cough is chronic and may be particularly bothersome at night. It frequently is a contributing cause of insomnia, which is not infrequently associated with congestive heart failure. The cough is often a precursor of paroxysmal dyspnea, and during the paroxysm it may be a prominent and aggravating symptom. This is particularly true of patients with a high degree of mitral stenosis who have repeated episodes of acute pulmonary edema initiated by severe coughing. These episodes are less frequent and more easily controlled after the establishment of auricular fibrillation with a slow ventricular rate.

Cough undoubtedly is deleterious to some patients with coronary heart disease, because the intrathoracic pressure may equal or exceed the arterial pressure during the act of coughing in patients whose blood pressures are normally low. Continued coughing also requires muscular work and is fatiguing to the patient.

In acute pulmonary edema the pinkish color of the sputum, when such is present, is a manifestation of the hemorrhagic congestion of the lungs. With lesser degrees of pulmonary congestion the cough may be productive of clear mucoid sputum or it may be entirely nonproductive. The stimulus for the cough in pulmonary congestion undoubtedly arises in the parenchyma of the lung and follows the same nervous pathways which account for the dyspnea. Morphine and its derivatives are very effective in reducing or eliminating both the cough and the dyspnea by reducing the sensibility of the vital nerve centers of the brain to these stimuli. The stimulus to cough is a frequent accompaniment of the bronchial constriction found in bronchial asthma. Some patients experience a good deal of constriction of the bronchial muscles in association with acute pulmonary congestion, and this may be an aggravating and additional factor in the production of cough. The alleviation of the excessive bronchial constriction by means of appropriate therapy may be of considerable value in these patients who demonstrate evidence of bronchial constriction.

Certain disorders of the cardiovascular system produce cough by direct pressure upon the trachea or bronchi. Aneurysms of the aorta are a classical example of this variety. The cough in these patients is seldom productive. Its brassy character, usually associated with hoarseness, results from pressure upon the left recurrent laryngeal nerve with palsy of the left vocal cord. Pressure from either an aneurysm or a large left auricle secondary to mitral stenosis is the mechanism which produces this symptom. It should be remembered, however, that tumor in the region of the hilus of the left lung can produce the same type of brassy cough. If the left auricle is large because of mitral disease, pressure upon the bronchi, especially at the bifurcation of the trachea, with separation and increase of the angle of the bronchi, may be an additional factor in the etiology of cough associated with mitral stenosis.

The direct pressure of a vascular ring resulting from a congenital right aortic arch and associated anomalies easily explains the cough in these patients. This condition occurs usually in infants or children. Recurrent pulmonary infection is an added factor to account for the cough and is produced by stenosis of the trachea. Because the results of surgery are so satisfactory with these patients in whom vascular rings are present, it is important to recognize them early before irreparable damage may be done to the bronchi or lungs.

Because cough, like respiration, is a voluntary as well as an involuntary act, it may be a manifestation of anxiety and nervousness in the cardiac patient. Even patients with perfectly normal hearts who may have their attention focused upon such a phenomenon as extrasystoles may develop a nervous cough. It is important, therefore, to use critical judgment in evaluating a cough in the nervous patient with or without evidence of cardiovascular disease, in an effort to determine whether the cough is a manifestation of heart disease or of anxiety.

Another cardiovascular disease which may prove to be associated with cough is pericardial effusion. The distended neck veins in patients with a large pericardial effusion help to demonstrate this disease. Other conditions should be considered as the cause for cough in the cardiac as well as in the noncardiac patient, such as acute or chronic infections of the lungs, bronchi, or trachea, pulmonary embolism and pleurisy from the resulting infarction, tumor of the lung or mediastinum, sinus disease, ear disease, and pertussis.

In the past few years the authors have observed several patients with various types of cardiovascular disorders in which cough was an early and important but generally neglected symptom. However, with careful evaluation of the history in each of these cases the importance of the symptom of cough was recognized usually because of its prompt subsidence following adequate therapy. Twelve representative case histories appear in the authors' report. (Ann. Int. Med., March '49, J. H. Currens and P. D. White)

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The Effect of a Hormone of the Adrenal Cortex (17-Hydroxy-11-Dehydrocorticosterone: Compound E) and of Pituitary Adrenocorticotropic Hormone on Rheumatoid Arthritis: Since 1929 one of the authors (P.S.H.) has studied the beneficial effects of pregnancy and jaundice on rheumatoid arthritis. Results of these and other studies led to the conclusion that even though the pathologic anatomy of rheumatoid arthritis is more or less irreversible, the pathologic physiology of the disease is potentially reversible, sometimes dramatically so that within every rheumatoid patient corrective forces lie dormant, awaiting proper stimulation and, therefore, the disease is not necessarily a relentless condition for which no satisfactory method of control should be expected, and that the inherent reversibility of rheumatoid arthritis is activated more effectively by the intercurrence of jaundice or pregnancy than by any other condition or agent thus far known.

It seemed logical to suppose that what causes relief of rheumatoid arthritis in pregnancy is closely related to, if not identical with, that which relieves the same disease in jaundice; if so, it could be neither hyperbilirubinemia nor a unisexual (female) hormone because neither of these is common to both pregnancy and jaundice. It was believed that the discovery of some biochemical denominator common to various agents or states beneficial in rheumatoid arthritis, but common especially to jaundice and pregnancy, would provide an improved treatment or control of the disease.

In time it was conjectured that the antirheumatic substance might be an adrenal hormone. This conjecture was strengthened by the knowledge that temporary remissions of rheumatoid arthritis are frequently induced by procedures which are now known to be capable of stimulating the adrenal cortices, such as general anesthesia or surgical operation. In January, 1941, the authors recorded their interest in adrenal cortical fractions in general and in Kendall's cortical extract, 17-hydroxy-11-dehydrocorticosterone (compound E), in particular. But compound E was not available to them until September, 1948. Since that time, the authors have given compound E more or less continuously to 5 rheumatoid patients, and for periods of from 8 to 61 days to 9 other patients; a total of 14 patients. All had moderately severe or severe chronic polyarticular rheumatoid arthritis of from 4.5 months to 5 years in duration, and not satisfactorily responsive to much previous therapy. Three patients whose disease was of relatively short duration (4.5, 5, and 5 months) were already considerably disabled by rapidly progressive arthritis.

The condition of the first 2 patients was among the worst; one walked with considerable difficulty, and the other had polyarthritis of many peripheral joints and rheumatoid spondylitis. The third patient had been using crutches for 7 months. The fourth, ninth, and tenth patients were temporarily bedridden by acute flare-ups; the seventh patient was using a wheel chair except for a few halting steps. Two of the patients had early flexion deformities of knees. Some were ambulatory, but required help to get in or out of bed or off the toilet.

Between September 1948 and 19 January 1949, compound E was used. It was then discovered that the less expensive and more easily prepared E acetate was absorbed with sufficient promptness, so it has since been used.

The preparation of the compound E used in this work has represented a cooperative effort of considerable magnitude by research chemists of Merck & Co., Inc., and by Kendall and his associates of the Mayo Clinic.

In each of the 14 patients, within a few days after treatment with compound E was begun, there was marked reduction of stiffness of muscles and joints, lessening of articular aching or pain on motion and tenderness, and significant improvement of articular and muscular function. A pattern of improvement was evident; usually, the fibrositic component (muscular and articular stiffness) began to diminish first, often within the first 48 hours after use of the hormone was begun, and often was markedly or completely relieved within a few days; next, articular tenderness and pain on motion were lessened; then articular swellings generally diminished, sometimes fairly rapidly and completely, occasionally tardily and incompletely (perhaps a matter of dosage). In 3 cases mild flexion deformities of knees or elbows disappeared within from 7 to 10 days. In another patient a knee, flexed at 165 degrees, straightened to 175 degrees after the use of compound E for 10 days, flexed again to 150 degrees when the control injections of cholesterol were being given, and later straightened to 180 degrees when adrenocorticotropic hormone was employed.

Those who had found the following maneuvers difficult or impossible often were able within a few days to do them much more easily or even normally: getting in or out of bed unassisted, rising from chairs or toilets, shaving, washing the hair or back of the neck, opening doors with one hand, wringing a wash cloth, lifting a cup or book with one hand, and climbing stairs.

The appetite often was rapidly improved. Several patients gained weight on routine general diets; for examples, 21.5 pounds in 10 weeks, 17.5 pounds in two months, 19 pounds in 40 days, 15 pounds in 27 days, and 7.5 pounds in 26 days. Improved strength frequently was noted. Several patients stressed the loss of the toxicity of the disease and experienced a marked sense of well-being. This euphoria apparently represented not mere relief of pain but a positive factor accompanied by increased mental capacity and activity, sometimes to the point of mild comfortable insomnia. Having in mind the field of mental illness, the attention of the authors' psychiatric colleagues was called to this euphoria and they are carrying out a series of observations regarding it.

Compound E was given to 9 of the 14 patients for only from 8 to 61 days. Then, unknown to the patients, injection of the hormone was abruptly replaced by injection of the control preparation, cholesterol. In 8 of the 9 cases symptoms began to return or to increase promptly, generally within from 2 to 4 days. The arthritis returned slowly in most cases, and rapidly in two. Sedimentation rates usually increased promptly, occasionally to more than was noted before the hormone was given.

One patient, a farmer's wife, came in a wheel chair, improved markedly after injection of the hormone, and was soon walking well. Her sedimentation rate decreased from 103 to 14 mm. in 30 days. Then the hormone was replaced by cholesterol. Although the sedimentation rate began to rise promptly (to 58 mm. 11 days after use of the hormone was stopped), she maintained practically all of her improvement for 23 more days in the hospital and for at least 5 weeks since returning to the farm and housework.

Two patients (cases 2 and 3) improved satisfactorily during 11 and 8 weeks of injections, relapsed promptly but partially when the hormone was replaced by cholesterol for 17 and 24 days, respectively, and again improved strikingly after use of the hormone was resumed in January. Each is now almost free of symptoms.

A local physician (case 4) was relieved by each of two periods of use of compound E but became worse each time compound E was discontinued. He said: "When I take the injection I lose completely my most distressing symptom, toxicity; also all of my fibrositis and most but not all of my arthritis. All I have left is arthritis in miniature."

The hormone has been given daily, in varying doses, to one patient since 21 September 1948, and to another since 24 December. In the latter case (case 5) a daily dose of 100 mg. of compound E or E acetate has controlled symptoms completely for most, but not all, of the time. The patient occasionally has "arthritis in miniature" for a few days.

The condition of the first patient treated has been the most difficult to control. Although her arthritis was effectively abated, it has never been completely relieved by continued daily doses of from 75 to 100 mg. of compound E or E acetate. Minor articular flare-ups have often occurred. Sometimes when the usual dose was employed, but especially when larger doses were utilized to control the flare-ups, interesting and important phenomena occurred. The patient would suddenly gain from 4 to 7 pounds within from 2 to 4 days, and then as suddenly lose the excess by way of spontaneous diuresis. There appeared some acne, mild hirsutism and rounding of facial contour. Her menses, always irregular, ceased recently. In this one case prolonged use of the hormone presumably has induced a temporary endocrine disturbance which is being studied in the Metabolic Unit.

Much more experience is needed before it will be known how effective or safe the prolonged administration of compound E will be.

In every case, when compound E or its acetate was employed, sedimentation rates decreased markedly; sometimes promptly and rapidly, sometimes more slowly. Rates of decrease varied from patient to patient and from time to time in the same patient, and were influenced by the dose of the different

preparations of compound E. Most rates became normal within from 10 to 35 days, but rates, although much reduced, did not become normal in cases 1, 2, and 14.

When serum globulin was increased and albumin-globulin ratios were low or reversed, the use of compound E, if continued longer than a few days, lowered concentrations of globulin and normalized albumin-globulin ratios. Urinary concentrations of 17-ketosteroids, which usually were in the low normal range, were reduced by the use of compound E, and thereafter were sometimes but not always reduced still more for a little while, then increased, but remained in the low normal and even subnormal range. The excretion of corticosteroids in the urine always increased when compound E was used. Usually there was a peak of a few milligrams (not more than 5) which was followed by a decline to a fairly constant level between 1 and 2 mg. In 4 anemic patients given the hormone for several weeks the hemoglobin increased 1.4, 1.8, 2 and 2 Gm. per 100 cc. In 2 others given the hormone for only from 10 to 20 days, values rose from 0.5 to 1.4 Gm. In patients given the hormone more or less continuously, counts increased by from 500,000 to 1,000,000 cells per cubic millimeter within a few weeks.

Generally, but not always, symptoms and sedimentation rates responded coincidentally. When rates were temporarily refractory, an increased dose (from 150 to 200 mg. daily) utilized for several days, as a rule caused rates to decrease. Doses must be individualized.

Satisfactory criteria for the chemical and physical properties of compound E and its acetate have been established. But before this was accomplished the use of two early samples coincided with the occurrence of articular flare-ups, stuffiness of the ears and mild dizziness. No notable reactions of toxicity were observed when later preparations of compound E or E acetate were used. Transient pain in the epigastrium developed in one patient. Use of the agent was stopped for 4 days, then continued for many days without recurrence of symptoms. Transient edema, generally pretibial, has occurred occasionally. It disappeared, sometimes spontaneously, or when the dose of the hormone was reduced or when potassium nitrate was employed orally. The effects of the hormone on electrolyte and water balance are being studied.

The authors are investigating the effects of related compounds, such as dehydrocorticosterone (compound A), 17-hydroxycorticosterone (compound F), desoxycorticosterone (DCA), certain adrenal cortical extracts and pituitary adrenocorticotropic hormone (ACTH).

Two female patients with severe rheumatoid arthritis received 100 mg. of pituitary adrenocorticotropic hormone (ACTH) intramuscularly for 12 days. Results of metabolic studies will be reported separately. Marked clinical

improvement essentially similar to that resulting from the use of compound E occurred promptly. Within a few days there was striking reduction of stiffness, pain on motion and articular tenderness. Sedimentation rates decreased even more promptly and steadily than when compound E was employed - from 93 to 18 mm. within 9 days in one case, and from 78 to 5 mm. within 12 days in the second case. Side effects resulted from (1) small amounts of posterior pituitary extracts with the adrenocorticotropic hormone, and (2) the biochemical alterations induced by adrenocorticotropic hormone. Noted were a sense of exhaustion, transient gas pains, heaviness in the chest and moderate elevation (from 20 to 40 mm.) of blood pressure. There were alterations in blood and urine chlorides, in electrolytes and the carbon dioxide combining power of the blood, and in the excretion of 17-ketosteroids and corticosteroids in urine. Both patients also received compound E either sometime before or after the use of adrenocorticotropic hormone. Relief from symptoms of arthritis was about the same when either hormone was employed; when the use of either was discontinued the symptoms of arthritis and sedimentation rates quickly increased.

A woman with severe rheumatoid arthritis who later responded very well to compound E and to adrenocorticotropic hormone was not benefited by the intramuscular use of 100 mg. of dehydrocorticosterone (compound A) daily for 7 days. Two more patients are now receiving compound A.

The syndrome of Addison's disease results whether the adrenal glands are impaired by atrophy, tuberculosis or tumor. To what extent could rheumatoid arthritis be merely a syndrome produced by any factor which causes a deficiency of adrenal hormone? Do some of the nonmicrobic arthritides usually considered specific (such as the arthritis of lupus erythematosus, of psoriasis, of chronic ulcerative colitis or even of acute gout and rheumatic fever) represent likewise a transient deficiency of adrenal hormone, merely an adrenal complication of different parent-diseases? In other words, regardless of the dinstinctive parent-diseases, are some of these articular complications essentially identical with rheumatoid arthritis? With these conjectures in mind, the authors state that they are giving compound E to a patient with severe lupus erythematosus and polyarthritis and to another with acute rheumatic fever. The encouraging results will be reported later.

Listed elsewhere were several conditions usually relieved by jaundice or pregnancy or both. The mechanism of relief may become less mysterious if some of these conditions are found to be responsive to compound E, and others to adrenocorticotropic hormone, which of course stimulates the production of not one but several adrenal hormones. A patient who had myasthenia gravis, treated at the Clinic by Eaton and Sprague, was not relieved by the daily use of 100 mg. of compound E for 12 days, but a patient with this disease treated elsewhere was relieved by adrenocorticotropic hormone.

It is of course most unfortunate that the currently available amounts of compound E and of adrenocorticotropic hormone are so small and may remain so for months to come. The production of compound E by partial synthesis is being expanded; total synthesis may be an eventuality. The supply of adrenocorticotropic hormone, a complex protein, depends on the availability of pituitary glands. Opportunities to enlarge widely the scope of these investigations in the near future appear to depend on improvements in the production of compound E.

Merck & Co., Inc., who have supplied compound E for this study have expressed their regret that because of the exigencies of manufacture no supplies of compound E are expected for treatment or additional research until sometime in 1950 at the earliest at which time supplies still will be exceedingly small. (Proc. Staff Meet., Mayo Clin., 13 April '49, P. S. Hench et al.)

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The Treatment of Head Colds with an Antihistamine Drug: This study was made during the period between 15 September and 15 December of 1948, at the Dennison Manufacturing Company, Framingham, Massachusetts. The antihistamine drug chosen was pyribenzamine hydrochloride (tripelenamine HCl) in tablet form containing 50 mgm. per tablet.

Each person coming to the medical department with symptoms of a head cold who had not had the symptoms for more than 48 hours was given 4 of the 50 milligram pyribenzamine tablets with instructions to take one every 4 hours; all were asked to return the next day for further treatment and to report the results. If the symptoms of the cold had not disappeared the patients were given 4 more tablets with the same instructions again. No one received the pyribenzamine tablets for more than 3 days. The patients were also warned that if the medication made them drowsy while at work, they should report back to the clinic for a cup of black coffee. This was done as a safety measure, because many of the employees work with and on fast moving machinery, and to be sleepy would be dangerous.

Five hundred and ten persons were treated with pyribenzamine tablets. They were all very sure that they had a cold or that a head cold was starting. They were all adults whose ages ranged from 18 to 65 years, and they based their diagnosis on many past experiences with head colds. When results of this study were checked, no one had anything more than an upper respiratory infection and, as far as could be determined, no other disease developed later except in the cases of 7 persons who lost time from their work and who reported that they had had grippe. Only 5 of the group gave a history of having any specific allergy that they had been aware of.

The predominating symptoms in these patients were watery nasal discharge, slight irritation (smarting or burning sensation) in the nasopharyngeal

area, slight achy feeling in the muscles or joints, slight cough, or sore throat. Sixty percent of the persons treated on the first day of their colds returned on the second and third days for further treatment and to report results of the treatment. The remaining 40 percent had to be contacted by the medical department personnel. Sixteen persons left the employ of the company before the final check-up could be completed.

One hundred and ten persons reported the results of the treatment as excellent because all symptoms of the cold had disappeared in 24 hours or less; they were surprised at the rapidity of the cure; some of this group reported that their colds had previously always been severe in nature. Others in this group of 110 persons said that they were cured after taking two tablets. Two hundred and four persons reported the results of the treatment as very good because the cold symptoms had disappeared in two or 3 days or the discomfort was so slight that they felt further treatment was unnecessary. Eighty-three persons reported that they were greatly improved and had lost no time from work, but that there were noticeable symptoms with minor types of discomfort or annoyance such as stuffy nose, cough, some sore throat, malaise, or that they did not consider that they were entirely free of symptoms for a period of 6 or 7 days. Ninety-seven persons reported no improvement whatever and felt that the treatment did not benefit them in any way. Twenty-two persons in this latter group had untoward symptoms considered to be a result of the treatment; 7 reported dizziness, 6 reported drowsiness, 5 reported severe headache, 4 reported digestive disturbances (squeamishness or cramps). Of the entire group of 494 persons for whom the results of treatment could be checked, only 7 reported that they had lost time from work, and 6 of these were in the group who experienced no apparent benefit from the treatment.

The above results reported in this study could probably be obtained with various other antihistaminic drugs. (Indust. Med., May '49, H. G. Murray)

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Rocky Mountain Spotted Fever Preventive Measures and Therapy:

Rocky Mountain spotted fever, an infectious disease caused by rickettsia and transmitted by ticks has a seasonal incidence corresponding to the seasons in which ticks are active.

The list of vectors, proved and potential, of Rocky Mountain spotted fever includes at least ten (10) species of ticks distributed in four genera.

Ticks appear in the spring, become numerous late in May or early in June, remain prevalent through July, and rapidly disappear in August. Their favorite resting places are long grasses and underbrush, particularly along

trails and streams. In the northwestern region of the United States, Dermacentor andersoni is the most prevalent from the middle of March to the middle of June; therefore, the disease in that region occurs from March to July. In the east, Dermacentor variabilis is most abundant from May to July with the highest incidence of disease occurring in June and July.

Chief reliance for protection of individuals should be placed upon the complete avoidance of ticks, but when this cannot be accomplished there should be a careful search of the body at least twice daily for the purpose of finding and removing any that are present. It is desirable to remove engorging ticks from the body of man (or animal) with tweezers or forceps rather than with the fingers. The tick is readily removed by pulling gently on its head end. Care should be exercised to avoid crushing its body. After removal, the site of attachment, the hands, and instrument should be disinfected; the ticks can be destroyed by burning or dropping into a disinfectant. The attachment of an infected tick for from 4 to 6 hours is probably necessary for transmission of the infection. Vaccination does not prevent development of the disease in all cases, but in those in which the disease does occur after vaccination, its severity is usually diminished.

It is not the policy of the Bureau of Medicine and Surgery to employ mass vaccination against Rocky Mountain spotted fever but authority will be given for its use for individuals and groups of persons who, because of the nature of their duty, are exposed to continuous risk in wooded areas and areas where heavy undergrowth exists, in regions of the United States where there is a serious hazard of acquiring Rocky Mountain spotted fever.

All requests for Rocky Mountain spotted fever vaccine should be addressed to the Bureau of Medicine and Surgery, Preventive Medicine Division, where the request will be reviewed and passed on to the Material Division.

Recent reports of therapeutic advances in the therapy of Rocky Mountain spotted fever have been summarized by Dr. Norman H. Topping, Associate Director, National Institute of Health, Bethesda, Maryland, and published in a Technical Bulletin of the Veterans Administration.

1. Aureomycin. A clinical study of 13 cases of Rocky Mountain spotted fever has been reported (JAMA, 25 Dec. '48, Ross et al.) in which aureomycin was used following demonstrations of its efficacy in experimental rickettsial infections in laboratory animals. Although the optimal dosage has not been definitely determined, it appears that excellent clinical results may be expected with daily oral doses of from 30 to 60 mg. per kilogram of body weight. In the 13 cases under discussion, the fever subsided rapidly within an average period of two and one third days, and a striking clinical improvement was reported in all of the patients. The effects were regarded as superior to those previously obtained with para-aminobenzoic acid because of the rapidity of their appearance and the absence of toxicity. No toxic effects were noted other than occasional nausea and vomiting.

2. Chloromycetin. The demonstrated effectiveness of this drug in the treatment of scrub typhus and epidemic typhus led to its trial in 15 proven cases of Rocky Mountain spotted fever with results which the investigators (Ann. Int. Med., Oct. '48, M. C. Pincoffs et al.) regard as successful. They recommend an initial oral dose of from 50 to 75 mg. per kilogram of body weight followed by the administration of 0.5 gram of drug every 3 hours for adults until the temperature reaches a normal level. The investigators discontinued therapy 24 hours after the patients became afebrile and no recurrences developed.

The average duration of fever after initiation of therapy was approximately 2.2 days. Improvement was not striking during the first 24 hours of treatment but became obvious on the second day, and by the third day the patients were mentally alert, free of symptoms, and interested in their surroundings and food. The rash did not spread after treatment was started and showed marked regression at the end of the second day. The results of chloromycetin therapy are obviously superior to those of the previous methods of treatment including the use of hyperimmune serum and para-aminobenzoic acid. Whether or not they are supeior to those from the use of aureomycin remains to be determined. The only suggestion of toxicity was the observation that vomiting occurred after the first or second dose in a few cases; this may be associated with the drug's bitter taste. It would appear to be essentially nontoxic in the doses which have been recommended, because no untoward effects have been observed following its use in the treatment of Rocky Mountain spotted fever or in a number of other rickettsial and bacterial diseases of man. (Preventive Medicine Div., BuMed)

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A Hereditary Factor (Cellano) Present in the Blood of 99.8 Percent of all Human Beings: A previously unrecognized agglutinogen of human blood was recently observed with the aid of an agglutinin produced by a mother of an infant with a mild form of hemolytic disease. This antibody, which behaves like a warm agglutinin, is remarkable because of the unusually high incidence of positive reactions (99.8 percent) in tests of 2500 blood specimens submitted for Rh testing. When first studied in May 1947, its titer at 37° C., in saline, was 1:64, and 18 months later its activity was only slightly diminished (1:32). Its titer was 1:1 at 20° C. and 1:4 at 5° C. Absorption experiments with numerous blood specimens of different antigenic structure indicate that the high incidence of positive reactions is attributable to the action of a single antibody. This blood factor is referred to by the patient's name, "Cellano," and its antibody as "anti-Cellano."

Of the 2500 blood specimens tested with anti-Cellano, more than 90 percent were from women whose Rh-negative blood was submitted for antibody determination. Excluding the blood of the immunized mother, only 5 (0.2 percent) were found to lack the Cellano factor.

In a series of 150 Negroes, all blood specimens were found to contain the Cellano factor. In the white population of the United States, the Cellano factor has a greater incidence than any other factor, exceeding the factor e (h'') by 2.8 percent. In this connection, it may be noted that in American Indians and Chinese, the D factor (Rh_0) has an incidence of 99 percent or higher, and certain races of American Indians are almost exclusively of group O. Correlated studies indicate that the Cellano factor is independent of the AB, MN, and Rh-Hr systems. This view was confirmed in a study of the Cellano serum made available to Dr. R. R. Race and his colleagues. A list of persons with Cellano-negative blood is being prepared for the purpose of identification of other antibodies which are characterized by a high incidence of positive reactions. Such blood would be essential for transfusing those rare patients who may have produced this antibody and also for transfusing their affected infants.

The genetic homologue of the Cellano factor, when found, would be a blood property present in 8.8 percent of the same population of which 0.2 percent would be homozygous and 8.6 percent heterozygous. Two human antibodies have been described which do give a frequency of positive reactions closely approximating this value (anti-Lutheran 8 percent and anti-Kell 7 percent). Parallel tests with the anti-Cellano serum and two specimens of anti-Kell serum on the family of one of the original 5 Cellano-negative persons found in this study show that the genes for Cellano and Kell antigens are alleles. alleles. The findings indicate that both parents are heterozygous for Kell as well as for Cellano. This would lead to an expectation among their offspring of 3/4 Kell-positive and 1/4 Kell-negative. In exact agreement with this, and in striking contrast to the frequency of 8.8 percent calculated to exist in the entire population, 6 of the 8 children were Kell-positive.

For the sake of uniformity, the letters "K" and "k," already used by the British workers for the genes determining Kell-positive and Kell-negative reactions respectively, will be retained. The observations with anti-Cellano indicate that the gene k can now be considered as indicating the presence of the Cellano factor. As in the case of M and N and the three Rh-Hr systems, there are three genotypes, (KK, Kk, kk), corresponding to three phenotypes. (Science, 6 May '49, P. Levine et al.)

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Hodgkin's Disease: The object of this paper is to present a classification of Hodgkin's disease, exclusive of Hodgkin's sarcoma, based on a correlation between histopathologic criteria and clinical course, and recognizing three types, namely, (1) compactly cellular type (slowly progressing) with the range of maximum life expectancy from 48 to 160 months, (2) fibrogranulomatous type (moderately progressing) with the range of maximum life expectancy from 20 to 60

months, and (3) loosely cellular type (rapidly progressing) with the range of maximum life expectancy from 12 to 20 months.

A review of the literature has disclosed no similar classification correlating life expectancy, although several authors have described types of Hodgkin's disease apparently histopathologically similar to those presented here.

The problem of Hodgkin's sarcoma and its relationship to Hodgkin's disease remains unsolved, the former having more of the qualities of a true neoplasm and closely resembling the stem cell lymphoma and clasmatocytic lymphoma of Gall and Mallory from which it can be differentiated only with difficulty by the presence of a few scattered granulomatous foci. There has been general agreement for some time on the types of cellular proliferation seen in Hodgkin's disease, but differences of opinion exist on criteria for classification.

The present study suggests that the histopathologic picture and clinical course can be correlated. In each of the 24 cases available for study, there were microsections, reasonable clinical records, and surgical, medical, or radiotherapeutic data. It is realized that these 24 cases, in themselves, are insufficient for the drawing of final conclusions. For this reason the method of study employed was designed to utilize these cases as a test of the impressions of histopathologic classification and prognostic criteria previously gained during a number of years of observation.

Complete clinical abstracts of the cases together with their subsequent histories were made. The microsections were presented, one case at a time, and in no particular order, to the microscopist, who had no previous access to either the case records or the slides. He was given no information concerning the names of patients, previous diagnoses, or clinical data. Solely on histopathologic grounds, therefore, the microscopist made a diagnosis and stated his impression as to clinical course and life expectancy. These were recorded, and later checked against the known clinical facts.

The slides were examined a second time, with the microscopist still having no knowledge of the case history, and still in no definite order, to see whether the original impression could be verified. In those few cases in which a discrepancy existed between the first and second readings the slides were presented a third time. The rarely persisting discrepancies were then called to the attention of the microscopist, the clinical data of that case made known to him, and the slides critically analyzed in the light of all available information and compared with other cases of similar type in an effort to explain the discrepancy rationally and to arrive at a final definite diagnosis.

The entire data were charted, all cases which might be expected to have similar course and life expectancy, as judged by cytologic criteria, being grouped

together. The expected course was then compared with the known course, and a check on the accuracy of the cytologic criteria was thus established.

Of the 24 cases studied, the follow-ups in 19 were sufficiently long to determine the clinical course adequately. Of these, 17 confirmed the histopathologic prognostication. An account of the histopathologic criteria follows:

In compactly cellular (slowly progressing) Hodgkin's disease the architecture of the lymph node is altered and there are irregular proliferations of reticulo-endothelial cells with formation of Sternberg-Reed cells. Pleomorphism, although present, is not striking. The proliferation is mostly of lymphoid and reticulo-endothelial nature with a compact structure. Few eosinophiles and plasma cells are found scattered throughout the section. Fibrosis and necrosis are not marked. The compact structure of the tumor with only slight fibrosis is characteristic of this type. Of the 11 cases studied, 7 were followed sufficiently long to determine the course. Of these, 5 followed the histopathologically expected course, one was more compatible with the acute and one with the fibrogranulomatous type.

In fibrogranulomatous (moderately progressing) Hodgkin's disease, the typical picture of Hodgkin's granuloma is seen. There is proliferation of reticulo-endothelial cells, with Sternberg-Reed cells, and pleomorphism with abundance of eosinophils, plasma cells and other leukocytes. There is a tendency to fibrosis and necrosis. Of 6 cases of this type all were followed adequately and showed a clinical course in keeping with that expected of a fibrogranulomatous type of Hodgkin's disease.

In loosely cellular (rapidly progressing) Hodgkin's disease, the architecture of the node is completely destroyed and replaced by sheets of loose reticulo-endothelial cells with numerous attempts at primitive Sternberg-Reed cell formation evidenced by early nuclear lobulation and with abundant mitotic figures. There is a diffuse pleomorphic picture of eosinophils, plasma cells, lymphocytes and leukocytes of all types with loose edematous structure. The capsule may be invaded and there may also be an invasion of lymphatics and blood vessels with an altered blood picture. The tumor is markedly vascular. The loose edematous structure, immature type of Sternberg-Reed cells and numerous mitoses are characteristic. Invasion of capsule, vessels and lymphatics also attest to the acute nature of the disease. Of the 7 cases studied, 6 closely followed the expected course; one patient was lost track of before definite conclusions could be drawn. (Am. J. Roentgenol., P. F. Sahyoun and S. J. Eisenberg)

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Nitrogen Mustard Therapy in Hodgkin's Disease: Methyl bis (B chloroethyl) amine, designated HN_2, was given by intravenous route for the treatment

in 50 successive cases of Hodgkin's disease, most of them severe and far advanced. Doses somewhat smaller than the usually recommended amount of 0.1 mg. per Kg. were used in courses of from 4 to 6 injections. Nausea and vomiting followed administration of the drug in 93.2 percent of the patients. Chills and fever occurred in 12.4 and 6.8 percent of the patients respectively. Dyspnea, cyanosis and diarrhea were rare.

In previously untreated patients, remissions were of much shorter duration than those obtained with roentgen therapy. However, striking remissions were commonly obtained in x-ray resistant cases. Remissions lasted from 17 to 331 days and in individuals receiving multiple courses were roughly proportional to the total dosage administered. A moderate prolongation of the remission period was obtained when HN_2 was combined with roentgen therapy.

Constitutional symptoms such as fever, night sweats, weakness, and itching responded exceedingly well in most cases to HN_2 therapy. Many previously incapacitated patients were completely rehabilitated for from several weeks to several months after a single dose of HN_2 therapy. Adenopathy and splenomegaly regressed in 70.2 and 71.7 percent of the patients respectively. Lymphoid masses previously resistant to x-ray therapy appeared to develop increased sensitivity to x-rays after a course of HN_2 therapy. Patients with extensive mediastinal involvement and obstructive symptoms responded only moderately well; those with lesser degrees of involvement showed a better response. Paraplegia due to intraspinal involvement was partially relieved in half of the patients although pain due to similar involvement was dramatically relieved in all patients. Pain due to pressure upon peripheral nerves was similarly relieved in all patients.

A slight but definite fall in the erythrocyte and hemoglobin levels occurred within from 5 to 6 days after the institution of therapy. Reticulocytes were maximally depressed between the sixth and tenth days. Of the leukocytic elements, the granulocytes were predominantly affected, with maximal cytopenic levels between the twenty-first and twenty-fifth days. The leukocytes gradually returned to normal by from the thirty-sixth to fortieth day. Patients presenting an initial leukopenia tended to develop normal leukocyte counts after an initial drop to low levels. The platelet count was affected in only 20.5 percent of the patients. Marked pancytopenia developed at times in terminal cases. In one patient severe hemorrhagic complications due chiefly to thrombocytopenia followed the administration of the tris form of nitrogen mustard and gradually subsided after a very stormy course.

Progressive but temporary marrow hypoplasia followed nitrogen mustard therapy in eleven patients studied with serial marrow punctures. Erythroblastic depression was noted within 24 hours and granulocytic depression within from 48 to 72 hours. The megakaryocytes proved to be the most resistant of the marrow elements. The marrow picture usually returned to normal spontaneously within a period of from 6 to 8 weeks after the cessation of therapy. Lymph node punctures revealed degeneration and pyknosis of lymphocytes within 24 hours

after the institution of therapy with a subsequent gradual disappearance of polymorphonuclear neutrophiles, eosinophiles, plasma cells, reticulum cells, and Dorothy Reed cells. Miliary foci of necrosis were demonstrated in a gland obtained at post mortem 7 days after the institution of HN_2 therapy. Miliary foci of necrosis were demonstrated in the liver of 3 patients dying between 9 and 19 days after the institution of HN_2 therapy. No such findings could be found in a case in which death occurred 54 days after the initiation of therapy.

The therapeutic results with HN_2 in Hodgkin's disease appeared to have little relationship to the histologic appearance of the involved tissue. The immediate response in so-called Hodgkin's sarcoma was particularly striking, and in one case, a remission lasting about a year took place.

Nitrogen mustard (HN_2) is a useful drug in the treatment of Hodgkin's disease, particularly in severe cases in which there are marked constitutional symptoms and visceral involvement. In these cases, a period of complete rehabilitation and a definite increase in life span of from two months to two years may follow the use of one or several courses of HN_2. HN_2 appears to have an almost specific affinity for the abnormal tissues of Hodgkin's disease. Although a chemical without any radioactivity, its effects resemble closely those of x-ray. It is, however, often effective in producing complete remissions in patients in whom the disease has proved completely refractory to continued x-ray therapy. A resumption in radiosensitivity may follow the use of a course of HN_2 therapy. HN_2 offers certain advantages other than simplicity of administration over x-ray therapy. Its quick action by intravenous route often results in a simultaneous reduction of all affected lymphoid tissues. In involvement of the spinal cord or peripheral nerves, HN_2 is far more effective, particularly in pain relief, than is x-ray. HN_2 is likewise more effective in bringing about relief of fever and severe generalized itching than is x-ray. The one outstanding characteristic of the drug is its effectiveness in inducing complete or partial remissions in certain generalized or febrile cases in which there has been no effect from persistent x-ray therapy. Repeated remissions may be induced by giving repeated courses of HN_2.

In relatively early cases of Hodgkin's disease, x-ray therapy is the treatment of choice, primarily because longer remissions can be obtained than with HN_2. However, it is possible that the best form of therapy, even in these cases, is that of the combined use of HN_2 and x-ray, the HN_2 being given for its effect upon proliferating cells which may either be at a distance from the local lesion or else so situated as to remain untouched by x-ray.

With cautious use of the drug, the reactions following HN_2 therapy are rarely severe enough to militate against its use. Severe granulocytopenia can be handled prophylactically by the use of penicillin. Severe thrombocytopenia rarely occurs. The only definite contraindication to the use of HN_2 is the

presence of jaundice, indicating some degree of hepatic dysfunction. Doses of HN_2 somewhat smaller than the generally recommended one of 0.1 mg. per Kg. of body weight are usually completely effective and are furthermore productive of minimal reactions.

As with all very quickly acting and potent drugs, HN_2 must be used with great care. Properly used, it has a well defined place in the treatment of Hodgkin's disease. Although cures are not to be expected and remissions are temporary, such remissions offer great comfort to the patient seriously ill with Hodgkin's disease. It is possible that HN_2 may be the forerunner of other even more effective chemotherapeutic agents. (Blood, J. Hematol., April '49, W. Dameshek et al.)

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Q Fever Studies in Southern California - III. Effects of Pasteurization on Survival of C. burneti in Naturally Infected Milk: The first report in this series described the recovery of Coxiella burneti (Rickettsia burneti) from the pooled raw milk of 4 dairies in Los Angeles County. Subsequent studies of 63 dairies in the same area have shown that the pooled raw milk of 40 dairies contained sufficient C. burneti to infect guinea pigs readily on intraperitoneal or subcutaneous injection. The second report in this series described epidemiological observations in 300 cases of Q fever in which it was found that 68 percent of the infected persons did not use raw milk in their households. Although this observation seemed to eliminate the household use of raw milk as a mode of infection in two thirds of the cases, it by no means eliminated the use of raw milk as a factor in the remaining third The 32 percent of the patients who used raw milk may be compared to the less than 5 percent of the general population who are known to use raw milk in the Los Angeles area. Furthermore, it should be pointed out that case finding to date may have been influenced to some degree by selection on the basis of occupation and residence.

Although most reported cases of Q fever cannot be traced to personal or household use of infected milk, the demonstration of C. burneti infection in the mammary glands of cows, goats, and sheep may indicate that milk represents a reservoir of Q fever infection. In previous but as yet unpublished work, it was found that C. burneti in laboratory suspensions (saline and skim milk) showed considerable resistance to heat; surviving a temperature of at least 60° C. for 30 minutes in sealed vials. Because this is only slightly below California minimum requirements for the holding-vat method of pasteurization and because this type of commercial pasteurization cannot provide assurance that each particle of milk is raised to the recorded temperature, additional work needs to be done in order to determine methods of pasteurization which are completely effective in eliminating C. burneti from milk.

The purpose of this report, the third in this series, is to describe five controlled experiments in which the effects of two methods of pasteurization on the survival of C. burneti in naturally infected milk were investigated.

Four rigidly observed tests of the holding vat and the high temperature short time (HTST) technics of pasteurization, as employed in the Los Angeles area were completed in 5 separate experiments.

The experiments were performed in two large milk processing plants A and B. In each plant the milk used in the studies consisted of from 400 to 600 gallons of pooled milk from dairies a and b. Composite milk specimens from each dairy had been found on several previous occasions consistently to contain sufficient quantities of C. burneti to infect guinea pigs readily. The presence or absence of infection was determined chiefly by serum reactions in the complement fixation test for Q fever shown by guinea pigs and mice 30 days or more after being injected with the milk specimens.

As far as could be determined by the methods available, milk supplies pasteurized in the HTST equipment were rendered free of infection, although the same milk in the raw state was shown in each instance to be highly infectious. In 3 of the 4 vat pasteurization experiments using the holding vat without space heater, C. burneti apparently was eliminated from the infected milk supplies. However, the pasteurized milk from one of the 4 tests of the holding-vat method produced antibodies against Q fever in 3 of 20 guinea pigs tested. Similarly 3 of 32 specimens taken from bottles of vat pasteurized market milk and one of 4 specimens of vat pasteurized market cream produced antibodies against Q fever when injected in guinea pigs. (Pub. Health Reps., 22 April '49, R. J. Huebner et al.)

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Isolation of Brucella abortus from Hogs: It is a general belief that Brucella abortus is not pathogenic for swine. Huddleson states that no one has reported the isolation of B. abortus from naturally infected swine. Attempts to infect hogs experimentally with B. abortus likewise have been virtually unsuccessful. Brucella suis is regarded as the etiological agent of the infection in swine, but it is known that these animals are also susceptible to Brucella melitensis. In the United States, Borts, McNutt and Jordan isolated B. melitensis from 12 hogs in 1946. They believed this to be the first such instance in this country. Huddleson classified only 2 strains as B. melitensis among 132 strains of Brucella isolated from hogs in the United States.

In view of the lack of similar species specific resistance to Brucella in other animals, this apparent resistance of swine to B. abortus would appear anomalous. Accordingly, during the course of an investigation of the incidence

of brucellosis in swine by use of cultural methods, the authors were led to adopt a procedure favorable to the recovery of B. abortus should it be present.

Submaxillary lymph nodes were obtained, in a program of routine weekly sampling, from hogs slaughtered in one of the large packing plants in Chicago. This program has now extended over a period of 6 months. Specimens were obtained from the carcass immediately after the initial Bureau of Animal Industry inspection of head glands. The nodes were removed with sterile instruments and placed in individual sterile screw-capped glass jars. These samples were then returned to the laboratory and promptly cultured. Each node was removed from its container, trimmed of fat, well seared in a flame, sectioned, and the cut surface directly streaked on the surface of Trypticase-Soy agar medium. Sterile instruments were used throughout and resterilized between use on individual specimens. The inoculated plates were incubated at 37° C. in an atmosphere of 10 percent added carbon dioxide.

B. abortus has been recovered from the lymph nodes of 8 hogs. Isolations were made during 4 different weeks well scattered over the period of sampling. In addition to B. abortus and B. suis, B. melitensis has also been isolated repeatedly. Plates streaked with nodes from which Brucella was not recovered have in most instances been practically sterile. Plates yielding Brucella have uniformly contained numerous colonies, or even confluent growth. This, together with the rigid technic employed, can leave no question but that the Brucella recovered were from the sampled hogs.

All 8 strains of B. abortus which were isolated adhered to the differential characteristics of the species. Identification was established by carbon dioxide requirement, hydrogen sulfide production, growth on differential dye plates, and the use of specific absorbed typing sera. Each strain was inoculated into guinea pigs. In every instance characteristic infection resulted, with production of agglutinins and recovery of B. abortus in culture at postmortem examination.

The demonstration of the occurrence of B. abortus in swine is of considerable practical importance. Its bearing upon the brucellosis control program in domestic animals is self-evident. Likewise, it may clarify some points in the epidemiology of the disease in man. (Pub. Health Reps., 29 April '49, N. B. McCullough et al.)

* * * * * *

The Reflecting Microscope: The last fifteen years have seen the birth of several advances in microscopy which can only be described as revolutionary. The reflecting microscope must take an important place among these discoveries, not merely as a competitor to the refracting microscope but also because its possible applications are so vast and so novel that, though great territories of research are opened up, it is unlikely that they will be fully explored in our

lifetime. Some of the main lines of research already undertaken with this instrument are briefly described here.

Reflecting microscopes have been constructed in various countries, but far the most promising type is that built by Dr. C. R. Burch, of Bristol, England (Burch 1947, Barer 1947). This differs from most other types in that aspherical mirrors are used in an attempt to ensure the highest optical performance. It is relatively easy to construct a reflecting microscope using spherical mirrors, but the N.A. (numerical aperture) of such an instrument cannot readily exceed 0.5 without the introduction of serious distortion due to spherical aberration. The use of aspherical surfaces enables the N.A. to be increased up to about 0.95. Unfortunately such mirrors require an unusual degree of technical skill for their construction, and it is rather doubtful whether they will ever be mass-produced.

The optical system of the microscope now in use is shown below. The objective consists of a small spherical convex mirror m_o and a large aspherical concave mirror M_o. The N.A. of this system is 0.65. The condenser is similar, with N.A. 0.58. The mirrors are made of speculum metal accurately figured by hand. They are coated with a very thin reflecting layer of aluminum.

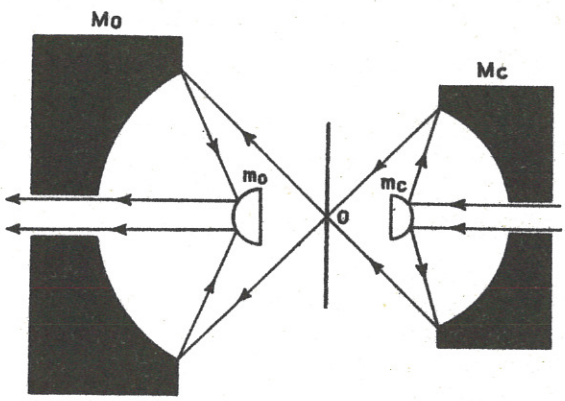

Fig. 1—Diagram (not to scale) of the present Burch microscope. The two large mirrors Mc and Mo are aspherical. Immersion components are available but not shown.

In the present instrument the clearance between the object and the small mirror m_o is 13 mm. This could be increased to about 20 mm. without much difficulty. A lens microscope of similar N.A. has a working distance of less than 1 mm. This large-working distance feature greatly facilitates microdissection. For example, organs such as the liver, spleen, kidney, and brain of a living anesthetized animal may be examined <u>in situ</u> at a working distance which permits operations under high magnification. Microdissection of cells by phase-contrast illumination is also simplified, and indeed the whole range of micromanipulative technics is greatly extended. Another application of considerable promise is the use of the instrument as a high-power skin or capillary microscope.

It is well known that the focusing properties of a lens system depend on the color or wave-length of the light used. This is not the case in a reflecting system, which is perfectly achromatic. The implications of this simple statement are not often fully understood, but it is this property which has made possible some of the more remarkable applications of the reflecting microscope.

In the first place, once the instrument has been focused with light of any wave-length it remains in focus for all wave-lengths from the far ultraviolet to the far infra-red. The advantages of this for ultraviolet and infra-red microscopy (and indeed for photomicrography in the visible region) are obvious. Straightforward ultraviolet microscopy is valuable on its own account both for the increased resolution due to the use of short wavelengths and for the selective absorption of certain cellular constituents at some wavelengths. This latter feature has been developed by Caspersson and others into a method of spectromicroscopy whereby various chemical constituents can be identified and located within cells. This technic has hitherto been exceedingly cumbersome and not altogether satisfactory, owing to the necessity of using microscopes with quartz lenses for the ultraviolet region. As a consequence, it becomes necessary to use strictly monochromatic light. to refocus both condenser and objective for every new wavelength, and to use the objective at wavelengths for which it is not corrected. The introduction of a truly achromatic system avoids these difficulties and allows the use of a simpler and in some respects more powerful method. The principle of this is to project an enlarged image of the object on to the slit of an ultraviolet spectrograph. This enables the entire ultraviolet and visible absorption spectrum of the microscopic object (cell, crystal, etc.) to be recorded in a single photographic exposure. Moreover, the use of a suitable source of illumination, e.g., a hydrogen discharge tube, gives the absorption continuously at every wavelength, which it would be impossible to obtain with a refracting microscope.

Many biochemists and pathologists are already familiar with the ultraviolet spectrophotometer for recording the absorption spectra of small quantities of substances in solution. The reflecting microscope enables similar results to be obtained for solid substances. Apart from the investigation of cellular structure and chemistry, the method promises to be of great value in work on newly isolated substances, such as antibiotics and hormones, which are available in only very small quantities (crystals weighing less than 10^{-10} Gm. have been investigated).

Recently the spectromicroscopic method has been extended in an entirely new direction. By a modification of the technic employed in the ultraviolet region, it has proved possible to investigate the infra-red absorption spectra of cells, fibers, and crystals. The infra-red absorption spectrum of a chemical compound is highly characteristic, so much so that it is often referred to by chemists as the fingerprint of the molecule. Absorption bands in the ultraviolet region, on the other hand, tend to be rather broad and ill defined. There are technical limitations to this method, the most obvious being that it is impossible to work with such small objects as in the ultraviolet region. The resolving power of the microscope decreases as the wavelength rises; hence at 10 μ the linear dimensions of the smallest object which can be dealt with must be about forty times greater than at a wavelength of 0.25 μ (2500 A). Despite this it is possible to obtain infra-red absorption spectra at wavelengths up to

14 μ on samples weighing less than 10^{-7} Gm. This has proved useful in the case of newly isolated substances of biological importance. Thus, certain predictions about the chemical nature of vitamin B_{12} have been made as a result of studies of the infra-red spectrum of a single crystal of vitamin B_{12}. Other examples of biological interest, such as the spectra of gramicidin and other antibiotics, and preliminary work on muscle-fibers and nerve-fibers will be found in the paper by Cole and Thompson.

The use of polarized ultraviolet and infra-red light in conjunction with these spectromicroscopic technics is also promising. These methods may help to elucidate the structure of oriented materials, such as crystals and fibers. Thus the infra-red spectrum may reveal the direction of orientation of such groups as CH, NH, OH, etc., relative to the crystal or fiber axis, and the ultraviolet spectrum may yield similar information about such constituents as benzene rings, purines, pyrimidines, tyrosine, tryptophane, etc. Indeed in favorable cases it may be possible to derive as much or even more information on the structure of organic crystals as by x-ray diffraction methods.

Another type of application in the infra-red region involves the use of a photoelectric image converter system, enabling the infra-red image to be seen on a fluorescent screen. Some interesting results have been obtained, particularly with phase-contrast illumination. Of the numerous possible applications which have yet to be attempted one of the most exciting would be to use it with ultraviolet light of very short wavelength. The quartz microscope cannot be used below about 2000 A because quartz becomes opaque to shorter wavelengths. With a reflecting system the possibility exists of working down to 1000 A or even less, provided that the mirrors can be made with sufficient accuracy. The use of very short wavelengths may lead to a considerable gain in resolving power.

Concerning the more immediate and mundane uses of the instrument, its performance in visible light is excellent. It has been used for conventional microscopy, as a polarizing microscope, and for fluorescence, interference, and phase-contrast microscopy. In nearly every case its performance has compared favorably with the best refracting microscopes of equivalent N.A. Indeed, it is safe to say that the reflecting microscope can perform all that a refracting microscppe can, and much more besides.

A question of some importance to biologists is what is the greatest N.A. that can be achieved by a reflecting system. It is well known that the N.A. of an objective without some form of immersion cannot exceed 1. Doctor Burch and his colleagues are now constructing an instrument with N.A. 0.95. It is, however, possible to increase the effective N.A. with a simple immersion-lens component. If such a component is made with a spherical surface whose center is at the object point, rays pass through it radially so that the achromatism of focus is not disturbed. The N.A. of the present instrument has been increased to 0.98 with such a lens, and that of the instrument on the next page, under construction, will be raised to 1.4. This is of the same order as that of the best apochromatic lens objectives.

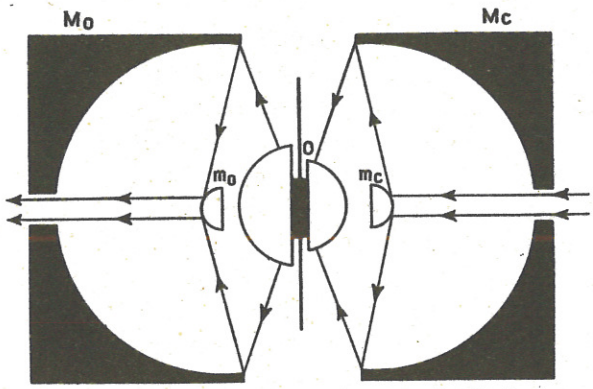

Fig. 4—Diagram (not to scale) of the projected new Burch microscope. All mirrors are aspherical. Note the spherical immersion lenses.

The Nuffield Foundation has made a generous grant toward the construction of ten reflecting microscopes of the type already in use. The Foundation has also contributed toward the expenses of the work on the biological applications of the instrument now in progress at the Department of Human Anatomy, Oxford University. (Lancet, 26 March '49, R. Barer)

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Dental Pulp Healing: The treatment of exposed pulp remains a controversial subject because no criteria for pulp healing have been established. Pulp capping is performed to maintain the vitality of a tooth; it is justifiable only if healing results under the capping material. Most pulp-capping experiments in the past have been evaluated on a clinical or roentgenological basis only. Such investigations appear to be concerned with the lack of adverse symptoms rather than the actual healing process. However, there exists no clinical method by which one can determine whether or not healing results. It is a well-known fact that pulp degeneration and necrosis may occur without any clinical signs or symptoms. A roentgenogram shows only those gross pathological changes which may or may not result at the apex of a tooth. Furthermore, vitality tests may indicate a vital tooth although the entire coronal portion of the tooth may be necrotic. Therefore, clinical studies using these methods of evaluation give only hazy results that should be substantiated by histological study.

In general, healing may be defined as the restoration of a tissue to its normal structure and function. The dental pulp is normally encapsulated by dentin and an adherent odontoblastic layer. Therefore, in applying this definition to the pulp, healing means the presence of healthy tissue capable of carrying on the function of the pulp, a continuous odontoblastic layer, and the erection of a dentin barrier walling off the exposure.

To determine whether a sound, young pulp that is deliberately exposed is capable of healing, the following experiment was carried out. Without anesthesia, occlusal or gingival third cavities were prepared under a warm water spray in sound bicuspid teeth to be extracted for orthodontic purposes. After a classical cavity preparation was made, the pulp was exposed. The tooth was then isolated with cotton rolls, the cavity dried with compressed air, and the exposure was capped with (1) a paste of zinc oxide and eugenol

or (2) a paste of calcium hydroxide and tap water. The remainder of the cavity in either case was filled with zinc oxide and eugenol. Only patients losing a minimum of two teeth were included in this study, so that healing could be studied under different conditions in the same patient. Zinc oxide eugenol and calcium hydroxide water pastes were used as capping materials under which to study healing, because of the acceptance of the former as a bland filling material and the successful results with the latter in amputation experiments. A total of 40 sound teeth from children from 9 to 15 years of age were used. These teeth were extracted at intervals of 24 hours, 2, 4, 6, 8, and 12 weeks after the pulp capping was performed. The extracted teeth were immediately ground into longitudinal slabs, fixed in Zenker formol, decalcified in 5 percent nitric acid, and prepared in the usual manner for celloidin sections, which were stained with hematoxylin and eosin. It was found that sound, young pulps capped with calcium hydroxide are healed within 4 weeks. Zinc oxide eugenol failed to promote healing of exposed, sound, young pulps. Although pulps capped with zinc oxide eugenol remained vital and without clinical symptoms during the course of this experiment, a chronic inflammatory reaction persisted at the site of the exposure. This demonstrates the inadequacy of clinical evaluation alone of such experiments. In several cases, new dentin was deposited around dentin fragments forced into the pulp. In one case new dentin was deposited on the wall of the pulp chamber in an attempt to constrict the diameter of the pulp and join dentin fragments to form a barrier. The only sign of healing observed was this attempt of the pulp to join dentin fragments forced into the pulp by a burr at the time of exposure. In no case was an exposure capped with zinc oxide eugenol completely walled off by new dentin formation during the 12-weeks' duration of this study.

On the other hand, the previously listed criteria for pulp healing are seen in the healing of exposures treated with calcium hydroxide. Within 4 weeks, the continuity of the odontoblastic layer has been restored, the exposure has been walled off by new dentin formation, and the pulp is normal. When calcium hydroxide comes in contact with exposed pulp tissue, there occurs within 24 hours a linear deposition of a calcium proteinate, forming a basophilic zone that sharply demarcates normal pulp tissue from the superficial area necrotized by the basic calcium hydroxide. Against the proteinate zone there occurs a proliferation of coarse, fibrous elements that undergo calcification to form what may be called a primitive type of dentin. After two weeks new odontoblasts start to differentiate and a barrier of new dentin is formed to join the walls of the pulp chamber to complete the healing process. (J. Dent. Research, April '49, R. L. Glass and H. A. Zander)

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One Thousand Unsuccessful Careers: Society has always dealt with the problem of poverty on a moral basis. Success has been honorific and failure

ignominious, and so handicapped persons failing to make the social grade have been judged by the method of moral evaluation. The terms lazy, improvident, vicious have been used as terms of reproach. Each advance in civilization has led to a changed technic in dealing with human failures; but in general, all have tended to attribute the squalid condition of the poor to individual qualities.

Latterly there has been a change in attitude. The tendency has been away from scrutiny of the individual and toward scrutiny of social organization. Sociologists in particular have attributed the plight of handicapped classes to social disorganization, and vast plans have been made for their relief, with very little information concerning the personality of the individuals involved. Medicine has a place in the social sciences and psychiatry is, in a way, the social wing of the medical profession. For this reason it seemed important to make a critical survey of a substantial number of welfare recipients with a view to determining what their personal qualities and their personal problems were.

This study involved 1,000 admissions to a large state institution, formerly called a workhouse, latterly called a hospital. It has been a reconnaissance study and therefore exact measurements did not seem applicable. The results are simple. The individuals show an excess of immigrants; a deficit in formal education, in occupational skill, and in marital success. The authors do not find a preponderance of catastrophic illness, but they do find alcohol to have been an important factor in the failure of these individuals to make a successful adaptation. This experience indicates the need of further psychiatric inquiry into this field, inasmuch as the technics of psychiatry seem to be peculiarly applicable. The data suggest the possibility of poverty often being secondarily economic and primarily either due to chronic illness or behavior disorder. (Am. J. Psychiat., May '49, A. W. Stearns and A. D. Ullman)

The following is from a discussion by Dr. David C. Wilson (Charlottesville, Va.) of the study reported upon above and appearing with it. This study is classified by its author as superficial, and superficial it is when the deeper causes of individual degradation are sought. But when the orientation of poverty and of nonsuccess in the unfolding panorama of life is considered, the impact of this piece of work is far from skin deep for, by its overt as well as implied uncoverings, it penetrates deeply into the social structure. "The poor are always with us" is an axiom as old as man. Yet Doctor Stearns points out that few studies have been made which try to answer why the poor are always with us. Millions of dollars are poured into the care of the dependent; cities impoverish themselves to support the unsuccessful; yet no one seeks the fundamental laws or rules which lead to unsuccess in a culture the watchword of which is progress. Doctor Stearns shows that physical handicaps, that disease, and that the ageing process have no relation to this social condition. The state of unsuccess is an apparent inability to get along which if not inborn develops early in life, then

characterizes the behavior of these individuals regardless of their physical or mental condition. They represent the sediment that settles to the bottom regardless of how often the cup is stirred.

The lack of affect of many of these persons suggests the apathy sometimes seen in prisoners of war. Isn't it possible that these hospital inmates, when they faced the realities of human struggle early in life, found themselves unable to survive except in this antisuccessful fashion so that unsuccess became, so to speak, a pattern of defense, and never to try became the only way to get along. Certainly if this is so, and Doctor Stearns' study would indicate that it is, then many of the attitudes toward the chronic poor only perpetuate the pattern of unsuccess. It is vital that this study be carried on until it is known whether the poor represent many individuals with as many causes for their plight, or whether they are victims of a way of life which insidiously engulfs human beings, a social disease, a fixed pattern of human behavior.

Aid should be given to collect more definite data, so that it can be known that these individuals do not represent examples of the mental diseases such as simple schizophrenia or certain forms of psychopathic personality. Rorschach studies, perhaps group Rorschach, would be practicable. If such persons are to be paid $25 a week or some more fantastic figure to insure their nonsuccess, to perpetuate their poverty, it is time to find out if there is not some way to prevent this disease of our culture.

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Raffinose Serum Tellurite Agar Slants in Diphtheria Diagnosis: Because of the objections to Loeffler's medium for use in cultural studies for determining the presence of Corynebacterium diphtheriae, the authors developed a raffinose serum tellurite agar. The results from the use of this new medium during a period of over one year have proven that it possesses very definite advantages over Loeffler's medium.

To prepare 100 cc. of the medium:

Weigh out 4.5 grams of Difco proteose No. 3 agar.
Dissolve the above in the Arnold sterilizer in 100 cc. buffered distilled water pH 7.1-7.2.*
Sterilize at 15 lbs. for 15 minutes in autoclave.
Cool to 50° C. in a water bath. This is important.
Add 10.0 cc. of stock raffinose serum tellurite solution aseptically. Mix thoroughly.**
Tube and slant aseptically. Make long slants if possible.
Incubate at 37° C. to test sterility.
Store slants in cold room; if tightly plugged they are satisfactory indefinitely.

*Preparation of Buffered Distilled Water:

a. M/15 anhydrous disodium phophate (Na_2HPO_4). Divide molecular weight given on the bottle by 15 and dissolve this amount of the salt in 1,000 cc. of distilled water.

b. M/15 anhydrous sodium acid phosphate (NaH_2PO_4). Divide molecular weight given on the bottle by 15 and dissolve this amount of the salt in 1,000 cc. distilled water.

c. To prepare 1,000 cc. buffered distilled water of pH 7.2 add 72.0 cc. of (a) above and 28.0 cc. of (b) above to 900 cc. of distilled water.

**Preparation of Stock Raffinose Serum Tellurite Solution:

The following sterile components are combined aseptically to give the stock solution. Human serum is specified, as it is easily obtainable from the serologic laboratory, but beef or other serum may be substituted although the results with these have not been as good as with human serum. Either crystalline potassium tellurite or the powdered salt is satisfactory and is used in 0.5 percent concentration.

Human serum	30.0 cc.
Raffinose solution (10 percent)	24.0 cc.
Potassium tellurite solution (0.5 percent)	6.0 cc.

Note: For preparation of above:

1. Human (Wassermann) serum is pooled and sterilized by Seitz filtration.
2. Raffinose solution (10 percent) is sterilized by Seitz filtration.
3. Preparation of potassium tellurite solution (0.5 percent) is as follows:

Grind 0.5 gram of C. P. dry potassium tellurite very fine in a small dry mortar. Add buffered distilled water (10.0 cc) gradually after grinding. Stir. Allow to settle. Remove clear supernatant by pipette to 100 cc. graduate. Repeat this process until all the tellurite appears to be dissolved. Add a few drops (0.33 ml.) of 10 percent KOH to the mortar. Rinse sides of mortar with 10 cc. distilled water. Add to graduate and make up volume to 100 cc. The final pH will be about 9.6. Seitz filter.

Caution: Keep C. P. potassium tellurite powder in a dessicator. If powdered tellurite is used add 0.33 ml. of 10 percent KOH to the solution.

Nose and throat swabs from patients suspected to have diphtheria were planted, as received, on both Loeffler and raffinose serum tellurite slants, the Loeffler slants being inoculated first. After incubation for from 18 to 22 hours, smears were made, stained with methylene blue, and examined under the microscope.

From the results of this comparative study, in the course of which hundreds of cultures were examined, it was concluded that all strains and types of C. diphtheriae, including the small colony variety, grow luxuriantly on the medium. Individual cells of C. diphtheriae are longer, fatter, and more pleomorphic when grown on raffinose serum tellurite agar than on Loeffler's medium. The cellular morphology of all types of C. diphtheriae is distinctive on this medium. Thus typing is facilitated. Many varieties of commensal organisms are either completely inhibited or greatly restricted in their growth. Certain streptococci, which are often confusing because of their growth in bacillary form on Loeffler's medium, appear as definite cocci or in chain formation on raffinose serum tellurite agar. Rarely is there any need to plate out doubtful cultures because typical C. diphtheriae is often visible in discrete colonies on the slant. Because the cellular morphology of all organisms is more distinct than on Loeffler's, those cultures diagnosed as negative are so reported with more assurance than would otherwise be possible. Positives are likewise more definitely positive. Cultures can be examined just as early as on Loeffler's medium. The medium is stable and reproducible, the ingredients are easily obtainable, and large or small quantities are prepared with equal ease. A higher percentage of positives will be obtained from raffinose serum tellurite agar slants than from Loeffler's. (Pub. Health Reps., 8 April '49, O. R. Whitley and S. R. Damon)

Dental Examination of Candidates for U. S. Naval Academy: During the month of June 1948, many candidates for appointment as midshipmen appeared before the Naval Medical Examining Board at the U. S. Naval Academy still possessing numerous carious teeth. Practically all of these candidates had received a preliminary physical examination, at which time they were to have been informed of the fact that "at the time of acceptance, a candidate from civilian life should have received all required dental treatment, including permanent restorations of carious teeth and the removal of deposits." The number of dental officers allowed for the U. S. Naval Academy is insufficient to permit the acceptance of candidates who fail to comply with the dental standards as provided in paragraph 2152 of the Manual of the Medical Department. It is, therefore, the responsibility of each dental officer who examines a civilian candidate for appointment as midshipman, U. S. Naval Academy, to find him not to meet the dental requirements until all carious teeth are restored.

Dental examiners who discover carious teeth in servicemen who are candidates for the Naval Academy, and who are otherwise physically fit for appointment, should make every effort to assure that these teeth are properly restored prior to the appearance by the man before the Naval Academy Medical Examining Board in June. The examining dental officer should either provide the necessary care for servicemen who are candidates or arrange appointments for them with the dental officer who is attached to their ship or station. In cases in which the candidate is from an activity where the services of a naval dental officer are not available, dental care should be provided as directed by paragraph 3114, Manual of the Medical Department, revised by Advance Change 3-6 dated 12 November 1948. (Dental Div., BuMed)

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Naval Dental Internships: At the present time there are 23 dental interns receiving training in naval hospitals and the Naval Dental School, NNMC, Bethesda, Maryland. The dental internship program has been expanded to make provision for 40 dental interns, commencing in August 1949. Thirty-five of these vacancies have already been filled.

The Navy dental internships provide a rotating type of intern training. They include training in the following sections of the dental services of the various naval hospitals:

Oral Diagnosis and Roentgenology
Operative Dentistry
Oral Surgery
Periodontia
Endodontia
Crown and Bridge
Denture Prosthodontia (Dental Div., BuMed)

Eight Weeks' Course in Tropical Medicine and Parasitic Diseases Available: The Bureau of Medicine and Surgery announces the availability of an eight weeks' course in Tropical Medicine and Parasitic Diseases at New York University Postgraduate Medical School beginning in October 1949. This course consists of lectures, laboratory exercises, and clinical demonstrations covering etiological agents, arthropod vectors, pathology, diagnosis, treatment, and prevention. Included will be infections caused by viruses, rickettsiae, bacteria, fungi, spirochaetes, protozoa, and helminths; nutritional diseases; tropical ophthalmology; dermatology; sanitation; and physiological problems of the tropics. The tuition fee for this course per trainee is $250, which will be paid from Medical Department training funds.

Requests are desired from medical officers of the regular Navy who are interested in this type of instruction. Requests must reach BuMed prior to 1 August 1949 to receive consideration. No service agreement is required. Authorization orders ONLY will be provided for those selected to attend. Requests are to be submitted to BuMed via official channels and must be properly endorsed by immediate Command with particular emphasis on availability during this period of instruction. No relief will be provided for medical officers authorized to attend. (This is the same course as the one described in the 22 April 1949 issue of the Medical News Letter except that in the 22 April notice the duration of the course should have been stated as eight weeks instead of eight months.) (Professional Div., BuMed)

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Training Program in Hospital Administration for Officers of the Medical Corps and Medical Service Corps, Regular Navy: The Bureau of Medicine and Surgery announces a program whereby a limited number of officers of the Medical Corps and the Medical Service Corps may receive training in Hospital Administration. This training will consist of an academic year of instruction in a civilian institution followed by a full calendar year of supervised administrative assistantship (Administrative Internship) in a naval hospital. Use of the following civilian institutions is contemplated for this training:

Columbia University, New York, New York
Johns Hopkins University, Baltimore, Maryland
Northwestern University, Chicago, Illinois
University of Chicago, Chicago, Illinois
University of Minnesota, Minneapolis, Minnesota
Washington University, St. Louis, Missouri
Yale University, New Haven, Connecticut

Those who complete this full training and satisfactorily fulfill all the requirements of the university concerned will be awarded a Master's degree.

The institutions listed require that applicants for admission have at least the equivalent of a bachelor's degree (M.D. degree alone qualifies) except that in the case of the University of Minnesota an applicant not meeting the minimum academic requirements may be enrolled as a special student. Special students receive the same instruction in all respects as those fully eligible but are not awarded the Master's degree upon completion of the prescribed training.

Requests are desired from interested medical officers in the rank of Captain, only, and from Medical Service Corps officers (Administrative and Supply) in all ranks. Each request must contain an agreement not to resign during the course of instruction and to serve three years in the U. S. Navy upon completion of the period of training. To receive consideration, requests must reach BuMed prior to 1 July 1949 and may be made by dispatch if the time element involved requires such action. Requests submitted by dispatch must be confirmed by a following letter.

Additional information will be provided by the Professional Division, Bureau of Medicine and Surgery, upon request. (Professional Div., BuMed)

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Status of Duty with FMF for Purposes of Rotation: A letter from BuPers to the Chief of BuMed, see page 39, contains information concerning the status of duty of medical and dental personnel with the FMF, for purposes of rotation.

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BUPERS-211-mf 15 April 1949

To: The Chief of the Bureau of Medicine and Surgery

Subj: Dental Officers Assigned to Fleet Marine Force; Status of Duty for Purposes of Rotation

Ref: (a) BuMed ltr 6132-jim Serial 138 of 21 Mar 1949

1. Reference (a) requested that duty of dental officers assigned to units of the Fleet Marine Force be counted as sea duty for purposes of rotation.

2. The Chief of Naval Personnel considers that medical and dental personnel on duty with units of the Fleet Marine Force are on sea duty for purposes of rotation. --Chief, BuPers. /s/ J. W. Roper, Deputy Chief

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BUMED CIRCULAR LETTER 49-52

Note: This letter is RESTRICTED.

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BUMED CIRCULAR LETTER 49-53 29 April 1949

To: All Ships and Stations

Subj: Ration Record, NAVMED HF-36

Ref: (a) BuMed ltr F33-ECH-EJB, L16-8(071-41) (BuMed C/L 44-91) dated 22 May 1944; N.D. Bul. Jan-June 1944, 44-618, p. 391.
(b) Instruction Memorandum 12-1 (Advance Notice of Change 12), Vol. 1, BuSandA Manual, Change dated 24 March 1949.

1. In view of the instructions contained in reference (b), the following modification shall be made in reference (a):

In the paragraph headed "Line 59-Dependents," delete the fourth sentence which reads, "Reference: BuSandA ltr. L10-5(1)NH(AB), dated 7 April 1943."

--BuMed. C. A. Swanson

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BUMED CIRCULAR LETTER 49-54 29 April 1949

To: MedOfComs, All NavHosps

Subj: Appointment of Collection Agents, in Lieu of Agent Cashiers, at Naval Hospitals

Refs: (a) BuMed Cir Ltr No. 44-91 dated 22 May 1944.
(b) BuMed Cir Ltr No. 45-78 dated 22 March 1945.
(c) BuMed Cir Ltr No. 46-84 dated 27 May 1946.
(d) BuMed Cir Ltr No. 47-80 dated 24 June 1947.
(e) Instruction Memorandum 12-1 (Advance Notice of Change 12), Vol. 1, BuSandA Manual, dated 24 March 1949.

It is stated in this letter that subject to the instructions contained in reference (e) addressees shall instruct disbursing officers to revoke the appointment of agent cashiers and then designate an officer, enlisted man, or a civilian attached to the hospital staff to perform the prescribed duties relating to the collection of official or quasi-official funds under the general supervision of and as prescribed by the medical officer in command. All instructions in references (a), (b), (c), and (d) which refer to BuSandA letter L10-5(1)/NH(AB) of 7 April 1943 are cancelled.

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BUMED CIRCULAR LETTER 49-55 3 May 1949

To: All Ships and Stations

Subj: Defective Medical and Dental Material; Reporting of

Ref: (a) BuMed CirLtr 48-109; N.D. Bul. 15 Oct 1948, 48-776

1. Reference (a) is hereby cancelled and superseded.

2. A standard policy is hereby promulgated for reporting defective medical and dental material, listed in the Army-Navy Catalog of Medical Materiel, which is considered unsuitable or dangerous for use.

3. When any stock item is suspected of being injurious, defective, deteriorated, or otherwise unfit for use because of inherent characteristics, improper manufacture, or faulty or inadequate specifications, the activity holding such material, including naval medical supply depots and storehouses, shall submit a report by letter (original and 4 copies) to Materiel Division, Bureau of Medicine and Surgery, 84 Sands Street, Brooklyn 1, New York, giving the following information:

(a) Item stock number and title.
(b) Document material was received on.
(c) Date of receipt and source of supply.
(d) Amount of stock apparently involved.
(e) Lot number, when applicable.
(f) Control number, when applicable.
(g) Manufacturer's and/or contractor's name.
(h) Statement as to the condition of other brands, other lot numbers, or other control numbers of the same item, if applicable.
(i) Condition under which item has been stored locally which may have adversely affected it.
(j) If the item is a drug or biological which has caused an untoward reaction upon administration, a description of the reaction shall be included.
(k) Statement, setting forth in detail the specific defects necessitating the report.

4. A sample or samples as appropriate of the defective material shall, if available, accompany the report to Materiel Division, Bureau of Medicine and Surgery, Brooklyn 1, New York. If the item is a drug which is suspected of producing an untoward reaction, the offending unit, bottle, package, or box should be included in the shipment and so identified. All stock under suspicion shall be suspended from use until final determination as to suitability for use is made. If material in question is nonexpendable, paragraph 3 above shall be complied with, and samples held pending instructions for submitting, from Materiel Division, BuMed. If material in question is expendable, the sample shall be expended as follows:

(a) Medical Supply Depots and Storehouses - expend from books for BuMed testing.
(b) Other activities - expend from books.

5. In the case of heavy equipment where the submission of samples is obviously impracticable, the statement required by paragraph 3 (k) above should include recommendations as to parts that could be replaced to return the equipment to a usable condition. Where available, medical or dental repair personnel should be consulted in preparing this part of report.

6. Upon receipt of such information, together with samples of defective material in applicable cases, the Materiel Division, Bureau of Medicine and Surgery, will take necessary steps to have laboratory examinations performed.

7. Following receipt of the results of the laboratory examinations of samples submitted or when corrective measures are determined, the holding activity will be advised by Materiel Division, Bureau of Medicine and Surgery, as to the disposition to be made of the material or the corrective measures indicated.

--BuMed. H. L. Pugh

BUMED CIRCULAR LETTER 49-56 Joint Letter 3 May 1949

To: Comdts, NDs and RivComs; MedOfComs, NavHosps, Continental U.S.

Subj: Separation of Women's Reserve and Nurse Corps Personnel During the Post-Demobilization Period; Cancellation of Joint Letter Concerning

Ref: (a) Joint Letter, Pers-912-mmc P19-4, BuMed A18-1/EN BuMed C/L No. 46-104, dated 8 July 1946.
(b) BuPers CirLtr 6-49; N.D. Bul. of 15 Jan 1949, 49-29.

1. Reference (a) is hereby canceled in view of the provisions of reference (b).

--BuMed. C. A. Swanson --BuPers. T. L. Sprague

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BUMED CIRCULAR LETTER 49-57 4 May 1949

To: Medical Officers in Command, All Naval Hospitals

Subj: Cross-Index System for Clinical Records

Ref: (a) Joint Armed Forces Statistical Classification and Basic Diagnostic Nomenclature, NavMed-P-1294.
(b) BuMed C/L No. 49-41 of 8 Apr 49.
(c) Cross-Index System for Clinical Records, NavMed P-1193, revised 2-49.

This letter states (1) that reference (b) provides for the use of reference (a) for recording and reporting diagnoses and surgical operations on and after 1 June 1949, (2) that the use of the new terms will require certain adjustments in the cross-index system for clinical records, (3) that NavMed P-1193 has been revised (ref. (c)) to reflect the terms of the Joint Armed Forces Nomenclature and is being distributed to all hospitals, and (4) that although no basic change has been made in the method of maintaining the cross-index system, it is believed that the contained instructions will facilitate the work of the medical records librarian during the period of transition from the old to the new nomenclature.

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BUMED CIRCULAR LETTER 49-58 5 May 1949

To: MedOfCom, U. S. Naval Hospitals
U. S. Naval Medical Supply Depots
National Naval Medical Center, Bethesda, Md.

Subj: Efficiency Rating Boards of Review

Refs: (a) CPL&D 49-16, dated 24 Feb 1949.
(b) NCPI 56.
(c) Chapter El Federal Personnel Manual.

Encl: 1. (HW) Suggested article

The chief purpose of this letter, by the enclosure therewith, is to furnish to the members and representatives of subject board information concerning their duties and responsibilities.

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BUMED CIRCULAR LETTER 49-59 5 May 1949

To: Distribution List Attached

Subj: Programs for Hospitalization of the Armed Forces and Improvement in the Utilization of Existing Hospital Facilities; Implementation of

Refs: (a) Secretary of Defense Memorandum to the Secretary of the Army, Secretary of the Navy, and the Secretary of the Air Force, dated 21 February 1949, re the subject designated report.
(b) CNO ltr Op-403F-ler, P3-2, Serial 194P40 dated 28 March 1949.
(c) The Report of the Committee on Medical and Hospital Services of the Armed Forces on Programs for Hospitalization in the Armed Forces dated 7 January 1949.

1. Reference (b) authorizes the Chief of the Bureau of Medicine and Surgery to initiate and coordinate such action as may be required to effect implementation of those recommendations contained in reference (c) as approved by reference (a), applicable to Naval Dispensaries. In part, these recommendations include the placing of certain Naval Dispensaries in the category of "Army type dispensaries."

2. The term "Army type dispensaries" connotes that "no hospitalization or definitive inpatient care will be attempted" in such dispensaries. This Bureau is of the opinion that these facilities should afford the equivalent of the care and attention a patient receives on board a naval vessel in the average sick bay.

3. It is specifically to be understood that in providing this arrangement, in every instance the individual welfare of the patient will be the primary concern; and secondarily, a rapid return to active duty status will be the goal. The highest standard of medical care that can be sustained with available personnel and materiel is mandatory.

4. This Bureau considers that the dispensary ward spaces which are not required for the care of emergency cases, patients under observation and those having, minor, brief illnesses and injuries, should be kept in "inactive status." These facilities are a part of the Medical Department's "reserve fleet" and should be available for rapid expansion and reactivation in case of mobilization or national emergency.

5. The Navy Dispensary with the exception of NAS Grosse Ile, NAS Olathe, Kansas, and NAD Hastings, Nebraska, of addressed activities, will be reduced in function to correspond to that of an Army type dispensary as of 1 June 1949, and all hospitalization (inpatient treatment and care) of patients from your activity shall be performed in the facility indicated in the attached distribution list.

6. The District Medical Officer or Staff Medical Officer as appropriate, should be consulted in regard to implementing this authorized change of status. --BuMed. C. A. Swanson

cc: CNO, CdtNavDist, CdrSeaFrontiers, DMO's, InspectorMedAct, NavHosps, Bureaus, and ComdtMarCorps

DISTRIBUTION LIST

Addressees	Hospitalization To Be Performed At
RecSta, Boston, Mass.	Chelsea Naval Hospital Chelsea (Boston), Mass.
NAS, Floyd Bennett Field Brooklyn, N. Y.	Naval Hospital, St. Albans, N. Y.
RecSta, Brooklyn, N. Y.	Naval Hospital, St. Albans, N. Y.
NAD, Earle, N. J.	Station Hospital (Army) Fort Monmouth, N. J.
NAS, Lakehurst, N. J.	Station Hospital, Fort Dix, N. J.
NAS, Willow Grove, Pa.	Naval Hospital, Philadelphia, Pa.

Distribution List (Continued)

Addressees	Hospitalization To Be Performed At
*NSD, Mechanicsburg, Pa.	Station Hospital (Army), Carlisle Barracks, Pa.
NavSta, Bainbridge, Md.	Station Hospital (Army), Aberdeen, Md.
MCAS, Camp Lejeune New River, N. C.	Naval Hospital, Camp Lejeune, New River, N. C.
MCRD, Parris Island, S. C.	Naval Hospital, Parris Island (Beaufort), S. C.
NATTC, Memphis, Tenn.	Naval Hospital, Memphis, Tenn.
NAS, Atlanta, Ga.	Station Hospital (Army) Fort McPherson, Ga.
NAS, Jacksonville, Fla.	Naval Hospital, Jacksonville, Fla.
NAS, Pensacola, Fla.	Naval Hospital, Pensacola, Fla.
NAS, New Orleans, La.	Station Hospital (Army) New Orleans Port of Embarkation, New Orleans, La.
NAS, Dallas, Tex.	Station Hospital (Air Force), Carswell Air Force Base, Fort Worth, Tex.
NAS, Corpus Christi, Tex.	Naval Hospital, Corpus Christi, Tex.
NAS, St. Louis, Mo.	Station Hospital (Air Force), Scott Air Force Base, Ill.
MCRD, San Diego, Calif.	Naval Hospital, San Diego, Calif.
NAS, San Diego, Calif.	Naval Hospital, San Diego, Calif.
RecSta, San Diego, Calif.	Naval Hospital, San Diego, Calif.
PhibBase, Coronado, Calif.	Naval Hospital, San Diego, Calif.
NAS, Miramar, San Diego, Calif.	Naval Hospital, San Diego, Calif.
MCTC, Oceanside, Calif.	Naval Hospital, Santa Margarita Ranch, Oceanside, Calif.

Distribution List (Continued)

Addressees	Hospitalization To Be Performed At
NAS, Los Alamitos, Calif.	Naval Hospital, Long Beach, Calif.
RecSta, San Pedro, Calif.	Naval Hospital, Long Beach, Calif.
NAAS, Monterey, Calif.	Station Hospital (Army), Fort Ord, Calif.
Disp, Treasure Island, Calif.	Naval Hospital, Oakland, Calif.
Disp, Alameda, Calif.	Naval Hospital, Oakland, Calif.
**NSD, Clearfield, Utah	Station Hospital (Air Force) Hill Air Force Base, Ogden, Utah
NAS, Grosse Ile, Mich. (General hospital type patients)	Percy Jones General Hospital, Battle Creek, Mich.
NAS, Olathe, Kansas (General hospital type patients)	Fitzsimons General Hospital Denver, Colo.
NAD, Hastings, Nebr. (General hospital type patients)	Fitzsimons General Hospital Denver, Colo.
NAS, San Juan, P. R.	Rodriquez General Hospital
NAS, Pearl Harbor, T. H.	Tripler General Hospital
NAS, Keehi Lagoon, Oahu, T. H.	Tripler General Hospital
NAD, Lualualei, Oahu, T. H.	Tripler General Hospital
NAS, Barbers Point, Oahu, T. H.	Tripler General Hospital
NAS, Kaneohe Bay, Oahu, T. H.	Tripler General Hospital
Disp, Kwajalein, Marshall Islands	Disp, Kwajalein will give inpatient care to all military personnel who do not require evacuation.

*Hospitalization of general hospital type patients from the Naval Supply Depot, Mechanicsburg, Pa., be accomplished in the Valley Forge General Hospital, Phoenixville, Pa.

**Hospitalization of general hospital type patients from the Naval Supply Depot, Clearfield, Utah, be accomplished at the Fitzsimons General Hospital, Denver, Colo.

Op24C/cj, NH/A4-2, Serial 99P24 29 March 1949

To: All Ships and Stations

Subj: Disestablishment of U. S. Naval Branch Dispensary, San Pedro, Calif.

Refs: (a) MOinC NavHosp, Long Beach, Calif., ltr, serial AEA 5256 of 31 Dec 1948, with Ends. 1 through 6.
(b) SecNav ltr serial 1969P24 of 7 Oct 1946.

1. The U. S. Naval Branch Dispensary, San Pedro, California, which was made a subordinate unit of the U. S. Naval Hospital, Long Beach, by reference (b), is hereby disestablished.

2. Personnel and facilities of the Branch Dispensary will be transferred to the U. S. Naval Hospital, Long Beach, California.

3. The Army Post Dispensary at Fort MacArthur, California, will assume the responsibility for providing out-patient medical services for the active-duty and retired naval personnel and their dependents residing in the San Pedro area.

4. Bureaus and offices concerned take necessary action.

--OpNav. Charles Wellborn, Jr.

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Op-10/hm, P16-1, Serial 40P10 11 April 1949

To: All Ships and Stations

Subj: Shortage of Medical Officers

1. During the next 6 months the shortage of medical officers in the Navy will become especially acute with the release from active duty of the medical officers who participated in the V-12 program and will have completed 2 years of obligated service. It will be necessary that the most efficient use be made of the remaining medical-department personnel, and particularly medical officers, to meet this acute shortage.

2. The Office of the Secretary of Defense has instituted a drive for procurement of medical officers for the armed forces and has directed a letter to the doctors in the country who were deferred from service during the last World War in order to complete their medical education. This procurement effort will undoubtedly assist in obtaining medical officers for the services, but it is still urgent that medical officers be utilized to the best of their professional capabilities at all times.

3. It is directed that the following steps be taken to insure that the best use be made of the professional qualifications of medical officers:

(a) Medical officers will not be assigned to administrative duties which will interfere with their professional duties in the care and examination of naval personnel.
(b) All naval personnel should instruct their dependents to limit their requests for medical-officer services to actual need.

4. Only by such measures for conserving the medical potential available will the medical department of the Navy be able to maintain the high standard of medical care to which our officers, men, and their dependents are entitled. --Op Nav. W. M. Fechteler

JJ51-(2) (345a), S30-3, EN28/A2-11 5 April 1949

To: All Ships and Stations

Subj: Stowage of DDT Emulsion Concentrate Aboard Naval Vessels

Refs: (a) CNO ltr Op-414-B-RW, serial 214P414 of 14 Jan 1946; AS&SL Jan-June 1946, 46-239, p. 251.
(b) BuShips Manual, ch. 30.

1. A recent board of investigation into a shipboard fire reveals that a large quantity of xylene-based DDT emulsion concentrate was stored on the damaged vessel contrary to the instructions of references (a) and (b). This material, identified as Standard Stock Nos. 51-I-157-475 (1-gallon can) and 51-I-157-500 (5-gallon steel container), is listed in the Catalog of Navy Material as follows:

> "Concentrated. Contains DDT, Xylene and Emulsifier.
> CAUTION: Poison. Fire hazard.
> NOTE: For shore use only in special applications. For shipboard requirements and most other uses, see Item Nos. 1092 and 1093."

2. Shipboard stowage of the above item is specifically banned by references (a) and (b). All commanding officers are requested to direct a thorough survey of all shipboard stocks of DDT emulsion concentrate to insure that no stocks of xylene-based concentrates are on board. Stocks of DDT emulsion concentrate identified by Standard Stock Nos. 51-I-156-50 (1 gallon) and 51-I-156-55 (5 gallon) are nonexplosive and safe for shipboard stowage and use. All containers of xylene-based insecticides should be removed from ships' stores and transferred as soon as practicable to shore stores.

--BuShips. C. L. Brand

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