NavMed 369

UNITED STATES NAVY

MEDICAL NEWS LETTER

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

Vol. 15 Friday, 13 January 1950 No. 1

TABLE OF CONTENTS

Circular Letters:

* * * * * *

Effect of Combined Injections of Desoxycorticosterone Acetate and Ascorbic Acid in Rheumatoid Arthritis: The following is a preliminary report of an investigation on the effect of combined injections of desoxycorticosterone acetate (DCA) and ascorbic acid in rheumatoid arthritis. The series comprises 9 patients (6 women and 3 men) with both mild and severe rheumatic disease of the joints of from 2 weeks' to 15 years' standing.

At the suggestion of one of the authors the patients were treated with an intramuscular injection of 5 mg. of DCA in one ml. of peanut oil, immediately followed by an intravenous injection of one Gm. of ascorbic acid (10 ml. of 10 percent solution). Five minutes after the injections the articular pain began to diminish and the articular mobility began to increase. From 15 to 30 minutes later, the pain had practically disappeared and the mobility improved as much as the anatomical changes in the joints and muscular atrophy would allow. All the patients reacted in a similar way. In some patients the improvement was astounding. One of the patients was completely crippled by pain and contractures caused by rheumatoid arthritis which she had had for 15 years; after one combined injection, she sat up with ease and moved her arms and legs about freely; all her pain had gone. It was noted that the skin became warmer and redder in the articular regions after the injection. Some patients became greatly exhilarated after the injections, more so than would be expected from the mere relief of pain. The effect lasted from 2 to 6 hours, occasionally more than 24 hours. It appears that it lasts longer with each further injection. In more acute cases one or 2 injections have been enough to banish the pain for 2 or 3 weeks (the present observation time).

The most suitable dosage has not been determined yet. Doses exceeding 5 mg. of DCA and/or one Gm. of ascorbic acid do not enhance the effect; half these amounts seems to be equally effective. The ascorbic acid can also be given intramuscularly, but no effect has been observed after oral administration. As a rule the authors have waited from 2 to 5 minutes between the injections. If they waited 2 hours they got no effect. In one case relief has been obtained for 4 days (at the time of writing) by the intramuscular implantation of one tablet of 100 mg. of DCA followed by injections of 0.5 Gm. of ascorbic acid at periods of from 6 to 8 hours.

As far as the authors can determine, the pain-relieving effect is confined to the joints and adjacent regions. In patients with sciatica, myeloma, and wound and muscular pains no alleviation of the pain was observed. As yet the authors have not seen any toxic side-effects after the injections. No changes in the blood pressure have been noted, nor any mentionable effect on sodium chloride or potassium in the blood. In some patients a drop in the sedimentation rate of the red blood cells was observed.

Further work is being done along these lines to ascertain how far the effects described are obtainable in different types of arthritis or other conditions,

and whether the observations can lead to a therapy in these diseases. (Lancet, 26 Nov. '49, E. Lewin and E. Wassen)

* * * * * *

Desoxycorticosterone Acetate and Ascorbic Acid in Treatment in Rheumatoid Arthritis: In this report, the authors state that in a considerable proportion of 23 patients who were treated with the recommended dosage of 5 mg. of desoxycorticosterone acetate (DCA) intramuscularly followed within 5 minutes by one Gm. of ascorbic acid intravenously, they have been able to confirm the results of Lewin and Wassen (see foregoing note - Ed.). Work is proceeding on the mode of action of these substances and the physiological changes they produce and will be reported in due course.

Striking Responses. A woman of 34 with polyarthritis of 5 years' standing and the left shoulder restricted to a painful limit of 150° in abduction acquired a full free painless arc within 10 minutes. The improvement was maintained for 7 hours, and control injections with water the next day failed to elicit any response, much to her disappointment. A woman of 38 with polyarthritis of 3 years' standing, 15 minutes after injection, was able to close one fist for the first time in 7 months; there was a great increase in excursion of the wrists with disappearance of forearm spasm, and the left knee bent easily into full flexion, an increase of 20°. All pain disappeared, the patient felt generally relaxed, and this improvement lasted for 8 hours. The same effect was reproduced 2 days later, but the next day an injection of ascorbic acid and saline gave only a mild improvement which she found disappointing. The original effect was reproduced with DCA and ascorbic acid after 2 days. A woman of 56 with polyarthritis of 12 years' standing, in great pain, with many tender joints, and unable to walk without assistance, 2 hours after injection, could walk unaided; all pain had gone, and both fists could be closed for the first time in 9 months. The improvement lasted 24 hours. Four days later the initial effect was reproduced, but after another 3 days control injections of saline intramuscularly and saline intravenously gave no obvious improvement. Some improvement persisted in this patient; the swelling and ulnar deviation of the metacarpophalangeal joints of one hand cleared up and she was able to get her shoes on again for the first time in 6 months. A woman of 44 with quiescent arthritis in many joints and a warm swollen foot and ankle in which full movement was prevented by pain and spasm, 10 minutes after injection, obtained considerable subjective improvement together with a full painless range of motion in her affected foot which was maintained for several hours. In a rather obtuse and skeptical working man of 60 with quiescent polyarthritis and a right shoulder restricted by pain and spasm to 140° of abduction, improvement began 15 minutes after injection and in 2 hours there was an enormous subjective change. He felt "as if his joints had been well oiled". There

was a complete easy range at the shoulder and an obvious ease of movement in the wrists. A man of 45 with polyarthritis and painful shoulders grossly limited in abduction and rotation was relieved of pain within an hour and acquired almost full rotation and greatly increased abduction movement.

Some Improvement. Fifteen patients lost some pain and some were completely relieved; there was lessening or disappearance of spasm, and in some there was measurable increase in joint movement. These cases include a boy with Still's disease and a man with gonococcal arthritis. One woman who had had a particularly good initial response lasting 24 hours then developed a painful exacerbation lasting for 3 days.

Failures. A man of 55 with polyarthritis of 10 years' standing and a man of 26 with quiescent ankylosing spondylitis of 4 years' duration were not helped by the injections.

The authors state that they know of no instance in which such rapid loss of pain and joint tenderness and increase in range and ease of movement have occurred in rheumatoid arthritis either spontaneously or after any form of treatment. They have taken the following features as criteria of improvement: (1) The subjective impressions of the patient. Of the 23 patients 21 felt better in themselves, the result of a general feeling of well-being plus a partial or complete loss of local pain and spasm. Several patients became obviously relaxed and at ease. (2) The relief of pain, both on the patient's statement and on the authors' observations during passive movement of affected joints. (3) Lessening of spasm. This is best appreciated if the observer moves the wrist-joint with one hand, keeping the fingers of his other hand resting on the volar surface of the patient's forearm. The relaxation of the wrist flexors after injection was frequently noted, and even with cold wrists in which there were fixed obstacles to motion at the extremes of a limited range the same range was now traversed without spasm or apprehension. In the better cases it was notable that grating and crepitus (signs of gross underlying pathological changes), which had previously been masked, appeared for the first time. (4) Improvement of joint movement includes an increase in measured range, a greater ease of motion, a loss of apprehension in moving, and, in 3 cases, the overcoming of a resistance to full shoulder motion which had been present for several years.

The authors are satisfied from these early observations that injection of DCA and ascorbic acid effects temporary clinical improvement in a considerable proportion of patients with rheumatoid arthritis. This improvement was dramatic in only 6 of the 23 patients, and the observer of a series which did not include such cases might fail to notice instances of slighter improvement which the authors refer to as a specific pattern of response indicated by increased ease and comfort in active and passive movement, the decrease of

regional pain and spasm, and an indefinable but genuine improvement in the patient's sense of well-being. The authors noted in case 2 that if DCA and ascorbic acid gave a good result on one day, ascorbic acid and saline might give a moderate improvement the next day, and they feel that enough of the DCA may linger for a day or 2 to enable this to happen, so that a longer interval is desirable between control injections. (Lancet, 17 Dec. '49, D. Le Vay and G. E. Loxton)

* * * * * *

Observations on the Clinical Use of Aureomycin: Aureomycin has been found to be bacteriostatic, as well as bactericidal for a number of important Gram-negative and Gram-positive microbes. Furthermore, it has been shown that rickettsiae are sensitive to its action. In spite of early reports concerning its effectiveness against certain viruses, it appears that as an antiviral agent it has considerable limitations. That aureomycin possesses considerable antispirochetal activity was evident from studies reported from the Mayo Clinic. It is of considerable practical importance that many penicillin-resistant and streptomycin-resistant, as well as streptomycin-dependent, organisms are susceptible to its action. Aureomycin is a fairly soluble substance, but in solution it has a pH of between 4 and 5. According to Bryer and his colleagues, it deteriorates rapidly in alkaline solution. This being so, in the treatment in infections of the urinary tract it would seem highly desirable to attempt to keep the pH of the urine in the acid range.

Aureomycin is rather unstable in serum and body fluids, which property caused considerable difficulty in early studies on absorption, diffusion, and excretion of the material. After the oral and intravenous administration to human beings of therapeutically effective amounts of aureomycin, Heilman and the author have been able to demonstrate antibacterial amounts of the material in the serum, cerebrospinal fluid, liver, kidneys, and spleen, as well as in the pulmonary tissue. The blood serum of patients receiving multiple doses of aureomycin will usually reach a maximal concentration of approximately 4 micrograms per cubic centimeter. It appears that the rate of excretion of aureomycin is rather constant in the absence of any impairment of renal function, and there appears to be no piling up of the antibiotic in the serum of these patients.

Aureomycin readily traverses the blood-brain barrier and diffuses readily into the cerebrospinal fluid. It is, therefore, an effective agent in the treatment in infections of the central nervous system, including pyogenic infections, as well as neurosyphilis. Because of its acid pH and local irritation, it should never be introduced into the spinal canal. It diffuses readily through the placenta and is therefore available in the fetal circulation, a factor which is of importance in its possible value in the treatment in pyogenic infections, as well as

in prenatal syphilis. Fortunately, aureomycin diffuses readily into the pleura, and the pleural fluid content is approximately one half that of the serum. It is, therefore, a useful agent in the treatment for infections of the pleura, but it should never be introduced into the pleural space. Furthermore, because of local irritation, aureomycin in its present form should not be used for purposes of nebulization.

Aureomycin is concentrated in the normal liver and excreted in the bile. Large amounts of the antibiotic are constantly being excreted in the urine, but it should be emphasized that the amount of the material in the urine is no index of the amount of the substance present in the tissues. It is a useful antibiotic in the treatment for infections of the urinary tract, but for the reasons which have just been mentioned, it is by no means the final answer to the problem of the treatment for infections of the urinary tract, because, as has already been pointed out, the tissue content of aureomycin, as well as any other antibiotic, is undoubtedly of great importance in connection with the therapy in these infections.

The recommended oral dosage of aureomycin in the treatment in infections caused by organisms susceptible to its action is 750 mg. (3 capsules) administered every 6 hours for adults; 500 mg. (2 capsules) every 6 hours for children; and 250 mg. (one capsule) every 6 hours for very young children and infants. A satisfactory method for administration of the material to infants is to mix the contents of the capsule with a teaspoonful of jam, jelly, or some other such foodstuff.

When gastro-intestinal irritation (nausea or vomiting) is produced by aureomycin, the administration of one fluidram of some aluminum hydroxide preparation, such as gelusil, given from 15 to 30 minutes after each dose is exceedingly helpful. On occasion reduction of the dose by one half for a short period may lessen gastric irritation. When aureomycin is to be administered for more than from 7 to 10 days, it is recommended that vitamin supplements be given. A satisfactory method for the oral administration of aureomycin to patients who have intranasal catheters in place for suction is simply to put the contents of the capsule into a feeding formula and administer the mixture. If the catheter is clamped for approximately 2 hours, absorption will occur.

If for any reason patients are unable to receive aureomycin by the oral route, it may be desirable to use preparations now available for the intravenous route. The recommended dosage of aureomycin for intravenous use in adults is 500 mg. administered every 12 hours. This amount is dissolved in from 250 to 300 cc. of saline solution. The author and co-workers have not found it necessary to use a buffer for the administration of aureomycin by this route. The material should be administered at a fairly rapid rate through an 18-gauge intravenous needle. It usually can be given in approximately 15 minutes, and

should never be given by the intravenous drip method. Aureomycin should not be injected into the veins of the lower extremities. Repeated injections of aureomycin produce venous irritation and thrombosis which may result in embolic phenomena. Intravenous injections of aureomycin should always be made into the veins of the upper extremities. Danger of embolic phenomena from the upper extremities is practically negligible. Intravenous aureomycin therapy should be used for not more than 2 or 3 days.

Considerable local irritation and pain result from the intramuscular injection of aureomycin, and in its present form it should not be given by the intramuscular route.

Aureomycin is an antibiotic of value in the prophylaxis of certain important infections. One is the grossly and obviously contaminated peritoneum. The second condition in which the prophylactic use of antibiotics is justifiable is in the prevention of a recurrence of rheumatic fever. Because aureomycin is an exceedingly effective antibiotic agent when administered by the oral route, it may well supplant penicillin for prophylaxis in rheumatic fever. Its range of antibacterial activity is such that it should be recommended. Two hundred and fifty milligrams by the oral route daily is a satisfactory amount. Further, it is the author's conviction that no patient with an organic heart lesion should undergo oral, intestinal, rectal, or transurethral operative procedures without the benefit of at least one or 2 days of prophylaxis with penicillin or aureomycin. The studies reported by Merritt concerning bacterial endocarditis following transurethral surgical procedures are significant. He found that bacterial endocarditis complicating transurethral operative procedures occurred predominantly in patients who had organic heart murmurs prior to operation. The organisms were predominantly Streptococcus faecalis and Staphylococcus aureus. Because Nichols and Needham have shown that 68 percent of the strains of Staph. aureus isolated from patients with infections on the urologic as well as other surgical services are now penicillin-resistant, but aureomycin-sensitive, and because Str. faecalis is also aureomycin-sensitive and, for the most part, penicillin-resistant, it naturally follows that aureomycin is the antibiotic of choice in the preoperative and postoperative treatment of patients with organic heart lesions, who are, therefore, potential candidates for the development of bacterial endocarditis.

Aureomycin has proved exceedingly effective in the treatment for scrub typhus, as well as endemic typhus. It has been reported to be of value in the treatment for Q fever, rickettsialpox, and Rocky Mountain spotted fever. At the Mayo Clinic the author and co-workers have had no experience with aureomycin in the treatment of these infections, with the exception of one patient with Rocky Mountain spotted fever. Dramatic improvement occurred after the oral administration of the recommended dosage of aureomycin.

The possible value of aureomycin in the treatment in certain viral diseases has received the attention of a number of investigators. It is exceedingly

effective in the treatment in lymphogranuloma inguinale and psittacosis. It should be pointed out, however, that the causative organisms in these infections are considered to be large viruses and occupy a position somewhere between the small viruses and the rickettsiae. Included among the important viral infections in which aureomycin has been tried and proved of little or no value are the common cold, influenza, poliomyelitis, and the plantar wart. Aureomycin will be found to be of little value in the treatment in variola, rubeola, or herpes.

A number of investigators have been impressed with the clinical response to aureomycin in so-called primary atypical (virus?) pneumonia. The author and co-workers have had occasion to use aureomycin in 14 cases in which such a diagnosis seemed justified. It should be emphasized, however, that the virus of so-called atypical pneumonia has not been clearly isolated and identified. In all such cases in which aureomycin has been used by the author and co-workers, there has been a prompt and satisfactory clinical response in spite of the fact that clearance of the lesion in the roentgenogram did not parallel the prompt clinical improvement. In those cases in which aureomycin has been employed the same criteria used by others have been established, namely, there has been a failure to respond to from 48 to 72 hours of penicillin therapy, the bacteriologic study of the sputum revealed no pathogenic microbes and in approximately one half of the patients tests for cold agglutinins have become positive. Regardless of the lack of value of aureomycin in the treatment in the true viral infections, the results to date in primary atypical pneumonia are at least impressive. Furthermore, because clinical improvement does occur with penicillin in these nonbacterial pneumonias and because aureomycin also inhibits Diplococcus pneumoniae, Streptococcus pyogenes, Staph. aureus, and a number of other microbes, including the important Gram-negative organisms, one could justify the conclusion that aureomycin is probably the drug of choice in the treatment of patients with pneumonia, regardless of the etiologic agent. To those who lack bacteriologic facilities, when treating pulmonary infections, it, therefore, follows that aureomycin is probably the antibiotic of choice.

The infections of the blood stream and urinary tract in which aureomycin is most likely to prove of value include those caused by Str. faecalis, Aerobacter aerogenes and Escherichia coli. In addition, aureomycin has proved of great value in the treatment in these infections caused by penicillin-resistant staphylococci. For example, Nichols and Needham have recently reported on their experience at the Mayo Clinic in which aureomycin proved life-saving in patients with bacteremia who otherwise would have failed to recover because of penicillin-resistance. In the treatment for urinary tract infections smaller doses than those usually recommended may be employed (250 mg. every 6 hours). As pointed out earlier, an attempt should be made to keep the pH of the urine in the acid range.

Aureomycin, like streptomycin, has been found experimentally as well as clinically to be of value in the treatment in tularemia. It is of value in the treatment in infections caused by Neisseria gonorrhoeae. However, it should be emphasized that penicillin remains the drug of choice in the treatment in the latter infection and is considerably less costly than aureomycin for the patient. The report of Bell, Pittman and Olson clearly suggests that the use of aureomycin in the treatment in whooping cough should be extensively investigated. The organisms associated with gas infections are extremely sensitive to aureomycin. Aureomycin is clearly indicated in the treatment in gas gangrene, but it should be combined with antiserum. Bacteroides infections should respond to aureomycin. Some early reports suggested that aureomycin might prove of value in the treatment in typhoid fever. However, in the experience of the author and co-workers, intensive aureomycin therapy has failed to influence the course of this infection favorably.

It was clearly evident from Heilman's experimental studies that, weight for weight, aureomycin is approximately 3 times more effective than penicillin against Borrelia novyi and Leptospira icterohaemorrhagiae. The preliminary clinical studies on aureomycin in the treatment in syphilis by O'Leary, Kierland and the author have been considerably extended. More recent studies indicate that aureomycin is probably superior to penicillin for treatment in neurosyphilis. It would seem reasonable to assume at this time that aureomycin has established itself in syphilotherapy.

That aureomycin has a very definite suppressive effect on the course of acute brucellosis was evident from the reports by Spink and his colleagues. However, aureomycin was not uniformly curative. It was evident, on the other hand, from some studies reported from the Mayo Clinic that aureomycin combined with dihydrostreptomycin is superior to aureomycin alone in the treatment in culturally proved acute brucellosis and brucellosis with localizing lesions. These studies have been considerably extended and will be reported elsewhere. To date, however, relapses have not occurred in cases in which this form of treatment was used. The recommended treatment consists of 3 Gm. of aureomycin per day by the oral route combined with 2 Gm. of dihydrostreptomycin given by the intramuscular route. In acute brucellosis this combination of antibiotics is continued for from 12 to 14 days. In cases of brucellosis with localizing lesions, such as lesions of the urinary tract or skeletal system, the recommended course of treatment is 28 days. During this period the patient receives 3 Gm. of aureomycin daily by the oral route and one Gm. of dihydrostreptomycin by the intramuscular route.

Other than gastro-intestinal irritation following the oral administration of aureomycin, toxic reactions have been almost negligible. In several hundred cases the author and co-workers have seen only one instance in which there was a cutaneous reaction, and in this case it could not be clearly established that

aureomycin was the offending agent. Alterations in the coagulability of the blood have been reported in the past in connection with penicillin, as well as streptomycin therapy. Although it is true that slight alterations in the coagulability of the blood may be noted under conditions of the experiments, this alteration is of no practical significance or importance when the ordinarily therapeutically effective amounts of the drug are employed. (Proc. Staff Meet., Mayo Clin., 7 Dec. '49, W. E. Herrell)

* * * * * *

The Potentiating Effect of Glucose and Its Metabolic Products on Barbiturate Anesthesia: In July 1944, the authors studied shock from hemorrhage, using a large number of dogs, most of them anesthetized with pentobarbital sodium (nembutal) given intravenously early in the morning. The dogs were then bled and various procedures carried out on them during the day. Most of these dogs recovered slowly from the anesthetic in the evening. On one occasion, when glucose (10 ml. of a solution of 50 Gm. of glucose dissolved in 100 ml. of water) was to be injected intravenously, the dog suddenly came out of anesthesia. The animal responded normally when spoken to and tried violently to get off the table. It was with difficulty that the intravenous injection of glucose was made. Instantly the dog relaxed, going into deep sleep and complete anesthesia exactly as after an injection of a barbiturate. The result was so striking that when the dog again recovered suddenly, an hour later, a fresh glucose solution was injected. This produced the same effect, that is, immediate sleep and anesthesia which, however, lasted only 45 minutes. The dog then went through this cycle of sudden awakening and then immediate sleep and anesthesia after an injection of glucose. The duration of sleep after each glucose injection was one hour, 45 minutes, 30 minutes, 20 minutes, 10 minutes, and 5 minutes, respectively. Then further injection of glucose produced no sleep, the dog remaining awake and, if anything, hyperexcitable. In several dogs similar results were seen, but others treated in the same way recovered slowly from the anesthetic and did not go to sleep again after glucose was injected.

Later, in studying approximately 100 dogs, shock and artificially produced high temperature were eliminated as factors producing the reaction, and it was found that a small percentage of normal dogs given pentobarbital sodium or hexobarbital soluble (evipal) reacted to the subsequent intravenous injection of glucose on awakening, as the shocked dogs did. An occasional dog reacted as strikingly as the first dog. Others reacted little or not at all to the injection of glucose. Because the authors were unable to reproduce this reaction at will, its study was greatly hindered. Finally, in 1948, guinea pigs were tried, using hexobarbital intraperitoneally as the anesthetic. On awakening, the animals were given glucose, also intraperitoneally. Practically 100 percent of the guinea pigs responded with a return to sleep after awakening from hexobarbital when

one ml. of glucose solution was injected intraperitoneally. Rats do not behave in the same way; rabbits and hamsters do, but with more delay in the onset of anesthesia after glucose.

As yet the authors have not developed an accurate quantitative method for studying this reaction. Guinea pigs were given a dose of hexobarbital intraperitoneally, from 0.20 to 0.25 ml. of a 2-percent solution per 100 Gm. of pig. They went to sleep in about 2 minutes and slept for about 45 minutes but varied considerably in time of awakening. When the pig was definitely awake and responded to stimulation, but before it could run around, glucose, or whatever substance was being studied, was given intraperitoneally. The pig usually responded instantly or within 5 minutes, and went to sleep on its side. It would at first respond slightly to a pinch of the foot by squealing, but more violently if the back of the neck was pinched. After 5 minutes, there might be no reaction of any sort after pinching the foot or neck. In about 45 minutes, the pig woke up and often could be put to sleep by a second dose of glucose. If too long a time passed before the second injection was made, there was no response.

The injection of glucose alone causes no sleep or anesthesia. That this is not an osmotic effect is shown by the fact that solutions of sucrose, as well as of sodium chloride of the same tonicity, do not produce such an effect. The authors have obtained this reaction to glucose after hexobarbital, narconumal, seconal sodium, and pentothal sodium, but have obtained no such reaction to glucose after ether, chloral, or chloralose. They have found that intermediary products of glucose metabolism such as hexose diphosphate, lactate, pyruvate, succinate, and fumarate, as well as malonate, and the water extract of both brewer's and baker's yeast produce the same effect, some more strongly than glucose. Sucrose, as already stated, produces no such effect, arabinose only a slight effect, and galactose and levulose a definite effect, but less than glucose.

The authors' results in dogs show very wide variation in response to glucose after barbiturate anesthesia; the great difference of reaction in animal species might account for this.

After this article had been written, it was found that, although the duration of hexobarbital anesthesia did not seem to be greatly changed by the simultaneous administration of glucose or its degradation products, in the few experiments tried, these substances greatly affected the dose of hexobarbital necessary to produce anesthesia, lowering it roughly from 0.15 ml. of 2-percent hexobarbital solution to 0.01 ml. when 2 ml. of 50-percent sodium lactate was given at the same time. The potentiating effect of glucose was striking, but less than that of lactate. Pigs which showed no response to a subanesthetic dose of hexobarbital went to sleep at once after the injection of glucose or lactate. It appears, therefore, that it is a matter of a potentiation of barbiturate anesthesia by glucose and its metabolic degradation products and that the return to a state of hypnosis or anesthesia after waking from barbiturate sleep is probably due to

a potentiating effect of these substances on the subanesthetic level of barbiturate in the blood. (Science, 23 Dec. '49, P. D. Lamson et al.)

* * * * * *

Studies on Rheumatic Fever - Comparative Value of the Weltmann Serocoagulation Reaction and the Sedimentation Rate (Cutler) in Determining Activity of the Rheumatic Process: One of the more difficult problems encountered in the clinical management of patients following an attack of rheumatic fever is the determination of that point at which the rheumatic fever process can be judged to have become inactive. Frequently patients do not reach a clear-cut end point and continue to manifest one or more of the active-stage symptoms or findings for a prolonged period after all other evidences of activity have disappeared. The lack of an accurate objective yardstick by which to evaluate such patients and by which to determine the safety with which they may be allowed gradual resumption of their normal activities results in a considerable variation in the management of such patients. Much depends on the facilities available as well as on the training, experience, and caution of the physician concerned. The laborious, expensive, and time-consuming process of obtaining serial clinical, electrocardiographic, and laboratory observations has led to the search for reliable and easily performed laboratory tests which afford reasonably accurate evidence upon which a physician can base a decision and with which he can easily detect recurring rheumatic fever activity.

The sedimentation rate has come to be widely accepted as the single most reliable laboratory evidence of the presence or absence of rheumatic fever activity. Several observers, however, have sounded a note of caution in the placing of too much dependence in this test, pointing out the ease with which it is affected by many extraneous factors which are unrelated to the disease process. It has also been noted that in some patients the entire rheumatic fever cycle is attended by little or no increase in the sedimentation rate although in other patients the sedimentation rate has remained elevated for prolonged periods after all other evidences of activity have disappeared and the clinical course of the patient would indicate that true inactivity has been obtained. The experience of the author and co-workers has paralleled that of others in this regard and the critical review of the records of many rheumatic fever patients at the U. S. Naval Hospital, Dublin, Georgia, revealed that in the past a too great dependence on the sedimentation rate appears to have condemned some of the patients to what probably were unwarranted periods of confinement to bed.

The serum coagulation reaction, devised by Weltmann in 1930, has been the subject of a number of reports which have indicated that the reaction may have a considerable usefulness in the differentiation between disease processes characterized by inflammation and exudation and those in which proliferation and fibrosis are predominant, although the sedimentation rate may be increased in either. These reports have also indicated that the Weltmann reaction is little

influenced by allergic and metabolic disorders, anemia, salicylates or other factors which are known sometimes to alter the sedimentation rate. Dees, in 1940, summarized the literature on the reported results of the Weltmann reaction and reported her findings in 246 patients with a variety of disorders, the majority of which were rheumatic fever or acute appendicitis in children. Her results were in agreement with those of previous workers, namely, in diseases characterized by inflammation and exudation there was a shift to the left of the reaction (coagulation of the serum occurring only with higher concentration of electrolyte); in those characterized by fibrosis or proliferation there was a shift to the right; and in normal individuals, those with allergic and metabolic disorders, blood dyscrasias, and chronic arthritis there was a constant reaction in the midzone (normal).

Scherlis and Levy, investigating the relationship of the Weltmann reaction and the erythrocyte sedimentation rate (Wintrobe) in patients with active rheumatic fever and rheumatic heart disease, concluded that in a single determination a normal coagulation band and a normal sedimentation rate were equally accurate (93.9 and 91.1 percent, respectively) in indicating the absence of active disease, but that an abnormal Weltmann reaction, especially a shortened coagulation band (shift to the left), was more frequently associated with disease activity than was an elevated sedimentation rate. They were unable to attach any prognostic significance to a persistent shift to the right of the Weltmann reaction in the development of rheumatic heart disease within the interval their patients remained under observation. These results were in agreement with an earlier study by Klein, Levinson and Rosenblum in children with rheumatic fever. These authors found that the Weltmann reaction reflected the various stages of evolution of the pathological changes of rheumatic fever; that it tended to return to normal prior to the sedimentation rate when the process became inactive, and that it was of considerable supplementary value to the sedimentation rate. Furthermore, they noted the value of the Weltmann test in the differentiation of subacute bacterial endocarditis from active rheumatic carditis.

In the present study by comparing the clinical status of the individual patients with the results of the sedimentation rate and the Weltmann reaction at specified intervals over a relatively long period of time, the authors sought to determine which test was of more value as a criterion of rheumatic fever disease activity and the supplementary value of performing routinely both tests on patients with rheumatic fever.

The Weltmann serocoagulation reaction proved to be a laboratory adjunct of considerable value in the prediction of disease activity in a large group of naval patients hospitalized with rheumatic fever. Of a total of 2552 observations upon 400 patients with or convalescent from rheumatic fever, the Weltmann reaction correlated with the clinical status 97.2 percent of the time against a correlation of 86.6 percent for the Cutler sedimentation rate. In 46 patients who

exhibited disease activity during the study, the Weltmann reaction correlated with the clinical status 93 percent of the time against a Cutler sedimentation rate correlation of 90 percent of the time during periods of activity. The respective correlations during periods of inactivity on these patients was 99 percent for the Weltmann and 93 percent for the sedimentation rate.

Of a total of 1857 observations upon 350 patients who exhibited no evidence of activity during the course of study, the Weltmann correlated 98.1 percent, and the sedimentation rate 85.9 percent of the time, with the clinical observations. When the 22 patients who had 4 or more abnormal sedimentation rates were excluded, the Cutler sedimentation rate correlation was raised to 92.2 percent. Certain patients contributed more than their share of errors and were significantly important in the greater percentage of discrepancies which occurred in the sedimentation rate. These consisted of those who failed to show expected increases of the sedimentation rate during periods of activity and secondly those who exhibited persistently elevated sedimentation rates following the cessation of activity. Similar persistent discrepancies between the Weltmann reaction and the clinical course of the patient were not observed.

The Weltmann reaction is of particular value as a supplementary test to the sedimentation rate in the handling of large numbers of rheumatic fever patients under circumstances in which the physician must depend to a large extent upon laboratory evidences of rheumatic fever activity. It is also of particular value when discrepancies between the sedimentation rate and the clinical course leave him undecided concerning the state of activity of the rheumatic fever process in his patient. (Proj. No. NM 005 051.04.01, Nav. Med. Res. Unit No. 4, Great Lakes, Ill., 20 Oct. '49, H. Nelson)

* * * * * *

Study on Thrombocyte Counts: It is now generally agreed that the megakaryocyte is the source of the thrombocyte. Dameshek and Miller discuss the changes that occur in the marrow in idiopathic thrombocytopenic purpura. The latter authors found that, in the marrows of 10 normal subjects, an average of 68.6 percent of the megakaryocytes showed thrombocyte budding. Cartwright and associates found thrombocytes budding in 75 percent of megakaryocytes in normal marrows. In a recent study of bone marrow films made by the citrate technic from 12 patients with idiopathic thrombocytopenic purpura before operation, it was found that 0.14 percent of the megakaryocytes showed evidence of thrombocyte budding. Eighteen postoperative films, made at varying intervals after operation on 10 of these patients, showed thrombocyte budding from 9.2 percent of megakaryocytes. When the bone marrows of 7 normal control patients without hematological abnormality were examined, however, thrombocyte budding was seen in only 0.43 percent of the megakaryocytes. This discrepancy in the results obtained in the normal suggested that the differences might be the result of variations in the technic used. Further investigations

were carried out on material obtained by the use of a dry syringe which is the routine method for making bone marrow films in the Thomas Henry Simpson Memorial Institute for Medical Research at Ann Arbor, Michigan, where the author works.

It was found that there is a great difference between the results of thrombocyte counts on marrow aspirate obtained by the dry technic and that obtained with the citrate method. When marrow aspirations are performed using a syringe flushed with sodium citrate, a false impression is obtained of the amount of budding of thrombocytes from megakaryocytes because many thrombocytes are washed away from the parent cells. When a dry technic is employed, the results are equally inaccurate because thrombocytes that by chance are in juxtaposition with megakaryocytes may stick to them and appear to be arising from them. When aspirated marrow samples are used, the best indication of the extent of budding is obtained when a dry technic is used, and examination of the marrow is limited to areas of the film that have definite marrow structure. It is probable that less than 25 percent of megakaryocytes in the normal marrow show true budding at any one time. (Proc. Soc. Exper. Biol. and Med., Oct. '49, R. H. Girdwood)

* * * * * *

Diverticulitis of the Colon: Diverticulosis of the colon is a common condition among human beings of both sexes over the age of 50. It is now recognized that a varying degree of diverticulitis occurs in almost all of these persons. Fortunately for the purposes of surgical treatment, in a very large percentage the diverticula are confined to the sigmoid and lower descending colon. In persons requiring surgical therapy this is equally true, over 85 percent of the lesions being confined to this area. Thus, complete excision of the local lesion may be carried out if surgical intervention should be required. Although the disease most often follows a fairly definite course, the future course in any individual case is quite unpredictable. Each such patient must be followed carefully by the general physician and re-examined at regular intervals.

For many reasons the medical profession at large has adopted a rather inert and ultra-conservative attitude towards surgical therapy in this condition. This attitude often results in the continuance of palliative treatment long after definite danger signals have appeared and in many instances the condition is allowed to progress to a stage in which definitive surgical therapy is both difficult and hazardous, if not impossible. There appear to be many factors responsible for this state of mind, the following probably being the most important: (1) the disease progresses slowly and a relatively small number of patients ultimately require operative therapy. (2) Advanced inflammatory changes may be present in the colon without causing signs and symptoms, so that often the physician is unaware of the stage of the disease which exists and the imminence of complications. (3) It is generally believed that diverticulitis is not a forerunner of cancer. There is not sufficient awareness, however, that in the late stages it is

difficult and often impossible to distinguish cancer from diverticulitis by any means. (4) This attitude seems in part to be a legacy from the past when the results of operative interference were often very poor. It is only within relatively recent years that the general acceptance of defunctioning colostomy and the availability of potent antibiotics plus many other important concurrent advances in surgical knowledge have made definitive surgical therapy reasonably safe. (5) The formidable nature of the operative treatment, comprising, as it most frequently does, a colostomy and multiple operations covering a period of a minimum of 6 months, weighs heavily in the minds of both patient and physician.

In the past, surgical treatment was not considered to be indicated unless one or more of the following complications was present: severe unremitting obstruction, perforation with its secondary sequelae, or fistula formation. This attitude towards surgery still persists, and consequently when many patients are finally referred to the surgeon the condition has advanced to a stage in which operative cure is virtually impossible. What is needed is general recognition of the excellent results of properly timed operative treatment and a clearer knowledge of the indications for operation. In general, it may be said that in the second stage of the disease, in which irreversible inflammatory changes are present in the colon, if a patient should continue to suffer with moderate or severe attacks of diverticulitis in spite of adequate palliative therapy, then surgical treatment should be advised. Properly timed surgical therapy gives such comparatively excellent results that it is imperative that the profession at large gain a clearer understanding of the danger signals of impending complications and advise operative interference at an earlier stage. (Ann. Surg., Nov. '49, Editorial, F. I. Lewis)

* * * * * *

Treatment with the Rice Diet in Heart and Kidney Disease and of Hypertensive and Arteriosclerotic Vascular Disease: The treatment in heart and kidney disease and in hypertensive and arteriosclerotic vascular disease with the rice diet is either ineffective or dangerous, unless it is done under rigidly controlled conditions. Ineffective, because small or minimal additions to the diet may spoil the entire therapeutic result; dangerous, because a strict observance of the diet may lead to a deficiency of vitally important elements unless care is taken that the equilibrium between intake and loss of these substances is maintained. For both reasons, therefore, continuous supervision, over a long period of time, including constant checks of blood and urine chemistry, is essential. Rigidly controlled conditions are likewise indispensable for the evaluation of the therapeutic results. Claims of positive or negative results based on nothing but blood pressure readings for from 4 to 8 weeks before and after treatment and not substantiated by heart films, electrocardiograms, eyeground photographs and chemical findings do not contribute much to the solution of this problem.

The same authors who a few years ago insisted that the restriction on salt, protein or fat is unwarranted in the treatment in hypertensive and arteriosclerotic vascular disease, now admit the importance of these dietary restrictions. No matter what the value of the restriction of sodium or of chloride or of protein or of cholesterol may be, the fact is that the rice diet contains less sodium chloride, protein, or fat than any other diet which has been devised to reduce the intake of these substances. The rice diet contains in 2,000 calories less than 5 Gm. of fat and about 20 Gm. of protein derived from rice and fruit and less than 200 mg. of chloride and 150 mg. of sodium. This does not mean that the patient's caloric intake is restricted to 2,000 calories; it varies according to whether weight gain or weight loss, protein increase or protein decrease is desired in the individual patient.

The marked decrease in the intake of nitrogen, sodium, chloride, sulfate, etc. on the strict rice diet, is followed by a marked decrease in the excretion of these substances by the kidney. Any deviation from these low excretion figures, except in rare cases, indicates that this particular diet has not been followed strictly for any length of time, and also in what way, either deliberately or unintentionally, it has been changed. A small amount of nitrogen is also excreted through the bowels; a comparison of the daily nitrogen intake with the daily nitrogen output by stool and urine shows that the nitrogen equilibrium on the rice diet can easily be maintained.

There are other indications that, because of the protein sparing action of the carbohydrates, the protein part of the rice diet is adequate and that there is no lack of essential amino acids, e.g., the fact that the production of hemoglobin is normal and that anemia does not develop. Also the fact that blood urea and nonprotein nitrogen decrease on the rice diet, whereas, in starvation and in protein deficiency the body uses its own protein, and the nonprotein nitrogen and the urea nitrogen in the blood increase.

Other differences between starvation and the rice diet are: in starvation, the serum calcium is decreased, on the rice diet unchanged. In starvation, the plasma protein and the A/G ratio are decreased, on the rice diet unchanged or, if low before, often become normal. In starvation, the blood sugar is decreased, on the rice diet unchanged. In starvation, the carbohydrate tolerance is decreased, on the rice diet increased. In starvation, the serum phospholipids are increased, on the rice diet decreased. In starvation, the CO_2 combining power is decreased, on the rice diet increased. In starvation, the blood volume remains unchanged or, in relation to body weight, increases; on the rice diet, according to Murphy's determinations, it decreases. In starvation, the interstitial fluid remains unchanged or increases, on the rice diet it decreases. (There is no simple relationship between volume changes and clinical course.) In starvation, the excretion of total creatine bodies in the urine is unchanged; on the rice diet it is decreased. In starvation, the excretion of creatine, ammonia and organic acids is increased, on the rice diet decreased. In starvation, the excretion of

total sulfate and inorganic phosphate is decreased, on the rice diet markedly decreased.

In 490 patients with hypertensive vascular disease and an initial nonprotein nitrogen of from 20 to 45 mg. per 100 cc. of blood, there was an average decrease of the nonprotein nitrogen from 33 to 28 mg. per 100 cc. of blood after an average period of 98 days. There was an average decrease of the urea nitrogen from 14 to 8 mg. These figures are also interesting in another connection; a decreased salt intake in the diet with ensuing hypochloremia is usually followed by an increase in the blood urea nitrogen, and consequently by an increase in the total nonprotein nitrogen. On the rice diet the salt is limited and the serum chlorides do decrease to a lower level. However, the restriction of the protein in the diet outweighs the effect of salt restriction and usually protects against the azotemia. The important thing is not how much protein is eaten, but how much of what kind of protein. Proteins differ from each other in regard both to the type and the relative proportions of the various amino acids of which they are composed. They also differ in regard to rate and degree of assimilation. These differences as far as the patient is concerned are indicated by what is termed the biological value of various proteins. It is of no advantage to the patient to receive a large amount of protein with a low biological value which cannot be properly utilized. Moreover, certain patients should use protein only for essential purposes and not merely to supply calories which can just as well be supplied by the oxidation and fermentation of carbohydrates.

The same considerations which apply to protein and essential amino acids are also valid with regard to fat and essential fatty acids. The absolute fat content of rice for instance is small, but the proportion of linoleic acid, an essential fatty acid, is high. One of the lipids which is supposed to have an important role in the development of vascular disease is cholesterol. A high cholesterol concentration in the serum is frequently found in arteriosclerosis, coronary artery disease, exudative vascular retinopathy, hypertensive vascular disease, as well as in diseases of the lens and vitreous body, in uncontrolled diabetes mellitus and in the nephrotic stage of nephritis. With the aging process in human beings the cholesterol metabolism becomes inadequate and the average serum cholesterol concentration of men of 50 is higher than that of men of 20 who have an identical cholesterol intake. However, if a 20-year-old man has a disease which causes a hypercholesterolemia, the same sequelae may occur as in the 50-year-old man. Cases of arteriosclerosis in diabetic children as young as one year have occurred.

The author and co-workers have examined the effect of the rice diet on the total serum cholesterol of 511 patients with hypertensive vascular disease. In 148 patients (29 percent) who started the rice diet with a normal serum cholesterol, the average decrease was 15 mg. per 100 cc. of serum after an

average period of 120 days. In 363 patients (71 percent) who had a hypercholesterolemia before the rice diet, the average decrease was 74 mg. after an average period of 102 days. These figures show that, no matter from what fatty or nonfatty substances the cholesterol in the body is derived, and by what mechanism a high serum cholesterol concentration is produced, the serum cholesterol need not necessarily remain high, as has been assumed, but can be decreased by the rice diet. As Starke has found, both cholesterol fractions, the free and the esterified cholesterol, decrease on the rice diet. One hundred and eighteen patients with an initial hypercholesterolemia of from 220 to 463 mg. per 100 cc. of serum were examined. The total cholesterol decreased in 113 of the 118 patients. The total cholesterol did not decrease in 5 of the 118 patients. In the entire group of 118 patients, there was a decrease of the total cholesterol from 288 to 217 (average), of the free cholesterol from 82.2 to 65.7 (average), of the esterified cholesterol from 205.8 to 151.3 (average). In 42 patients with hypertensive vascular disease, the serum phospholipids were determined. There was a decrease from 9.9 to 8.9 mg. lipid phosphorus per 100 cc.

In the serum of 12 patients on the rice diet, after an average period of 15 weeks, the serum choloride showed a definite decrease, the serum bicarbonate a definite increase; the serum sodium, potassium and total base remained relatively constant. Another change in the mineral metabolism of patients on the rice diet is in the urinary excretion of inorganic sulfates and inorganic phosphates. The inorganic sulfate excretion decreases by 82 percent, the inorganic phosphate excretion decreases by 62 percent. These findings are interesting for 2 reasons. Firstly, because phosphates and sulfates are derived mostly from protein, the decreased excretion of phosphorus and sulfur shows again that on the rice diet no endogenous protein is being broken down. Secondly, the sulfate and phosphate metabolism is important because of the acid-base balance. In kidney insufficiency, the acid side predominates. The kidney has lost one of its main metabolic functions; it is no longer able to form ammonia. On the rice diet, the urine chloride concentration is decreased. This does not affect the acid-base equilibrium because it is counterbalanced by the decrease in the sodium excretion. However, the potassium concentration on the base side is increased, and the sulfate and phosphate concentration on the acid side is decreased, so that even with an insufficient ammonia formation the urine becomes alkaline.

The 3 case histories that follow indicate what can be achieved in the individual patient. A 13-year-old school girl in the nephrotic state of chronic nephritis is an example of the disappearance of marked generalized renal edema and hypoproteinemia on the rice diet. Early in January, 1948, this girl developed swelling of the lower extremities after a sore throat. She was treated by bed rest, salt-poor diet (for part of the time, high protein diet), and penicillin. In February, 1948, massive anasarca developed; a paracentesis was done which resulted in a weight loss of 22 pounds. Later, because of marked dyspnea, a

thoracocentesis was necessary and one quart of fluid was removed from the right pleural cavity. During June, the facial edema which had been present since January became worse and the general edema and ascites increased. When the oliguria became serious, the patient was referred to the author and co-workers. The rice diet was started on 18 June 1948. No further paracentesis or thoracocentesis was done. The albuminuria decreased from 10.1 Gm. per liter (average during the first 20 days on the rice diet) to 0.17 Gm. (average after from 111 to 131 days of rice diet). The plasma protein increased from 4.0 Gm. to 5.8 Gm. The cholesterol decreased during this period from 540 mg. per 100 cc. of serum to 185 Gm. There was a total weight loss of 63 pounds in 15 weeks with gradual disappearance of ascites and pleural effusion. After 8 months on the rice diet, the plasma protein has increased from 4.0 to 6.8 Gm., the cholesterol had decreased from 540 to 135 mg. per 100 cc. of serum.

A 45-year-old man had had a myocardial infarction in 1945 followed by a myocardial aneurysm, progressive cardiac failure with massive peripheral edema, ascites, liver enlargement, hypoproteinemia, hypocalcemia, albuminuria, and decubitus ulcers. Previous treatment, including 4 months' hospitalization, consisted of salt-free diet, oxygen, digitalis, salyrgan, aminophyllin, ammonium chloride, theominal, coramine, sedatives, intravenous glucose, and paracentesis. The rice diet was started 7 August 1946, and was strictly followed; a paracentesis was done 13 August. Digitalis was continued for 2 months, but all other medications were discontinued immediately. There was a loss of weight (edema) of 50 pounds in 10 weeks. Up to the present time (2 and 1/2 years later), the patient has received no medication; he is up and around and completely asymptomatic. The plasma proteins have increased from 5.7 Gm. per 100 cc. to 8.2 Gm. The heart is considerably smaller and the aneurysm of the posterior lateral wall of the left ventricle is now clearly visible in the A-P view.

A 27-year-old man who 2 years before admission to Duke Hospital, while in the Navy, had scarlet fever and acute glomerulonephritis, followed by chronic glomerulonephritis, had been hospitalized for 16 months and treated with rest and various diets. During the month prior to admission, the patient had an exacerbation of his headache, noted blurring of vision and had a generalized convulsion, for which magnesium sulfate was given. At the start of the rice diet the blood pressure was 180/120, the heart was enlarged, the vision considerably impaired, with bilateral marked papilledema, many hemorrhages and extensive exudates. The total phenolsulphonephthalein excretion in 2 hours was 7 percent. The nonprotein nitrogen was 90, the urea N 66.4 mg. per 100 cc. of blood. The calcium was 7.8, the phosphorus 6.6, the cholesterol 350 mg. per 100 cc. of serum. The serum chloride was 99.8 mEq. per liter. After 5 months on the rice diet, the total PSP excretion in 2 hours was still only 10 percent, but the NPN was 36, the urea N 15.8 mg. per 100 cc. of blood. The calcium was 8.9,

the phosphorus 5.1, the cholesterol 210 mg. per 100 cc. of serum. The serum chloride was 88.2 mEq. per liter. The blood pressure was 137/99. The patient was asymptomatic; he had regained his eyesight; papilledema, hemorrhages and most of the exudates had disappeared; the heart had decreased in size with a change in the transverse diameter of 27 percent.

In more than 70 percent of 777 patients with hypertensive vascular disease without evidence of any primary renal disease most of whom were seriously ill and had failed to respond to other forms of treatment, the rice diet, given for periods of from 4 to 1,150 days (average 92 days), has proved beneficial; that means that it has produced one or more of the following effects: decrease in the sum of systolic and diastolic blood pressure of at least 40 mm. Hg, reduction in heart size with change in the transverse diameter of 18 percent or more, change in T1 from completely inverted to upright, disappearance of severe retinopathy. To begin with, the author presents 3 typical cases of so-called benign essential hypertension without serious cardiac, renal or retinal complications. The first patient is an example of a satisfactory response to the diet in about 4 months. It is the case of a 35-year-old woman who had had hypertensive vascular disease for 11 years. There was no evidence of any renal excretory involvement. Of 2 brothers with hypertensive vascular disease, one had died of a stroke at the age of 37. For years, the patient did not feel up to par, with increasing fatigue and exhaustion. There was a sensation of pressure and throbbing in the back of the head and in the eyes. From January to April 1947, because of the appearance of retinal hemorrhages, rutin, vitamin K and sedatives were given; all activities had been severely restricted. The patient began the rice diet in April, 1947. All medication was discontinued. On the first day of the diet, the blood pressure was 202/132; after 3 weeks of the diet the blood pressure was almost as high as before: 180/132. After 120 days, the blood pressure was 122/95. It has remained at this level until the present time (2 years) in spite of the fact that 2 ounces of meat, one potato, 9 oz. of vegetables, one cup of coffee per day and 2 oz. of vegetable oil, 4 oz. of spaghetti per week, have been added to the diet. The patient has resumed her activities and is completely well. The second patient is an example of a rather slow response of hypertension to the diet. It is the case of a 22-year-old man with benign essential hypertension without any history of kidney disease or evidence of renal excretory dysfunction. The patient had known about his hypertension for 6 months. He was asymptomatic except for intense headaches. He was started on the rice diet in New York. Because the blood pressure did not change in 7 and 1/2 weeks, he came to Durham. During August, September, and October, 1947, while he was staying in Durham continuously, the blood pressure remained persistently at a level of from 170 to 190 systolic and from 130 to 145 diastolic; the headache, however, disappeared. When the patient returned for re-examination in November, 1947, and March, 1948, the blood pressure was as high as before. From June, 1948, on, i.e., 12 months after the rice diet was started, his physician in Alberta noticed that the blood pressure was

decreasing. When the patient returned to the author and co-workers in August, 1948, after 14 months on the rice diet, the blood pressure was as low as 128/100.

The shortest time in which the author and co-workers have seen a marked blood pressure decrease on the rice diet was 4 days. The average time is from 3 to 4 months. In 777 patients with hypertensive vascular disease who followed the rice diet for from 4 to 1150 days (average 92 days), there was a definite decrease of the blood pressure level in 71 percent of the total group. The average of this decrease was from 198/116 to 150/96 in 101 days. If one differentiates the results according to the length of time the patients have been following the diet, the importance of the time factor becomes obvious. In 392 patients who followed the diet for from 4 to 74 days (average 37 days), there was a definite lowering of the blood pressure in 62 percent. In 385 patients who followed the diet for from 75 to 1,150 days (average 149 days), there was a definite lowering of the blood pressure level in 81 percent.

The third patient with benign essential hypertension is an example of a satisfactory response to the diet in one month. It is the case of a man now 47 years old who was well until he was 37. In March, 1940, he was seen in the New York Hospital. The blood pressure was from 165 to 200 systolic and from 105 to 135 diastolic. A diagnosis of hypertensive vascular disease was made. In January, 1941, he was seen in the Presbyterian Hospital. The blood pressure was found to be 200/140. One month later, the patient was seen in the Rockefeller Hospital with a blood pressure of 200/140. He was treated there with tyrosinase until this had to be discontinued because of a severe shock-like reaction. Next, he went to Boston, where a lumbodorsal sympathectomy was done. The sympathectomy did not help this patient. The blood pressure figures 14 months after the operation were even slightly higher than before. In 1945, the patient had a therapeutic trial with testosterone with no result. In March, 1945, when he came to the author and co-workers, he had a feeling of tightness around the heart, headaches and swimming in the head. He had difficulty in walking and complained about a tendency to go toward the left and had at times run into walls. The blood pressure was 220/132. The average of daily blood pressure readings during the 20 days he was in the hospital on a 1,500 calorie diet was 197/129. No evidence of renal excretory dysfunction was found. PSP and urea clearance tests were normal. The rice diet was started on 20 April 1945. The blood pressure after one month of diet was normal and has remained normal to the present time. On 24 February 1949, it was 114/82. The diphasic T_1 in the electrocardiogram reverted to normally upright in 7 months, and has remained upright since. The heart became smaller in size with a change in the transverse diameter of 12 percent. The patient who was a sick man in 1945, is now, 4 years later, well and active.

Patients such as these 3, with so-called benign essential hypertension are frequently told not to be concerned about their disease, unless some

complication develops. The author believes the most appropriate time for treatment is before the more incapacitating complications of the disease have developed (cardiac breakdown, cerebral accidents, loss of vision and renal insufficiency). Hypertensive vascular disease can be compensated to a great extent even when critical complications are already present. The reversion of an abnormal electrocardiographic pattern to normal in a 35-year-old man with hypertensive vascular disease of less than 3 years' duration occurred after 26 months on the rice diet. The blood pressure during this time decreased from an average of from 205/122 to 150/103. Retinal hemorrhages and exudates disappeared. The deeply inverted T_1 became upright; the electrical axis improved.

The time factor in the gradual improvement of T_1 is illustrated by a 35- or 36-year-old woman in whom hypertension was known to have been present for about one year. In May, 1943, T_1 was deeply inverted; in March, 1944, T_1 was low inverted; in February, 1945, low upright; in May, 1946, normally upright. This case also shows that there is neither a simple relationship between blood pressure drop and T_1 improvement nor between reduction in heart size and T_1 improvement. The blood pressure decreased from 220/150 to 124/85 and the heart became normal in size within 10 weeks on the rice diet. Three years were required for the inverted T_1 to become normally upright.

The shortest period of time in which the author and co-workers have seen the reversal of an inverted T_1 was in the electrocardiogram of a 23-year-old man with hypertensive vascular disease, uncomplicated for 3 years, in the malignant phase with severe neuroretinopathy for 3 months. During the first month of the rice diet in which T_1 became normal, the blood pressure level decreased from an average of 222/148 to an average of 153/112. A normal blood pressure was reached only after 2 more months on the diet.

The T waves in Lead I were evaluated in 520 patients. None of these patients received digitalis or any other drug. All electrocardiograms were made with the patient at rest and recumbent. In 286 electrocardiograms which were normal at the start and in 102 electrocardiograms which were abnormal at the start, no change occurred. In 132 electrocardiograms, a change did occur, in 10 in the direction from normal toward inverted, and in 122 in the direction from abnormal to upright.

In the case of a 43-year-old woman who had had hypertensive vascular disease for 14 years, there were no complications for 11 years. Then auricular fibrillation and heart failure developed with liver enlargement, edema, dyspnea, and substernal pain. The usual treatment with dietary restrictions, rest and digitalis was given, with no improvement. Within 8 months on the rice diet, the blood pressure decreased from 252/140 to 141/99, and the heart became

smaller in size with a change in the transverse diameter of almost 40 percent. The patient became asymptomatic and is now doing rather strenuous work.

Another patient, an example of the length of time required for a heart which is enlarged and disfigured by the disease to change its size and shape back toward normal, was a 57-year-old man who had had hypertensive vascular disease for 4 years. Hypertensive heart disease had become apparent in April, 1947. He was treated with digitoxin, ammonium chloride, mercurials, nitroglycerin, aminophyllin, weight reduction, and salt-restricted diet. In spite of this medication and a weight loss of 30 pounds, the blood pressure increased and the heart failure became worse. When the patient came to the author and co-workers, the rice diet was started, and all medication including digitalis was immediately discontinued. The edema disappeared in 20 days; the blood pressure returned to normal in 2 months. A decrease in heart size was noted after 6 weeks with a change in the transverse diameter of 8.7 percent; after 5 months there was a change of 29 percent; after 9 months there was a change of 42 percent. The patient became completely asymptomatic and has been without any medication for the past 14 months.

Chest films of 286 patients taken before and after one month or more of dietary treatment were measured for comparison (no digitalis or other drugs were given after the day the first chest film was taken). In 15 (5 percent) of the 286 patients, the heart became larger with an average increase of 2.6 percent. In 146 patients there was a decrease in heart size with a change in the transverse diameter of 6.2 percent (average); in 106 patients there was a decrease with an average change of 14.2 percent and in 19 patients a decrease with an average change of 24.4 percent.

The author does not think that the improvement in the electrocardiographic pattern or the decrease in heart size or the disappearance of papilledema, hemorrhages, and exudates in the eyegrounds occurs as a simple consequence of a decrease in blood pressure. He has seen quite a few patients in whom these improvements have occurred in spite of the fact that the blood pressure remained at exactly the same level as before. They, likewise, occur in the many instances in which vascular retinopathy and/or heart enlargement are present without hypertension.

When one patient came to the author and co-workers in March, 1946, he was 56 years old. He had had nephrolithiasis and had developed hypertension and hypertensive heart disease. Nephrectomy on the left side had been done in 1940 in the hope of arresting his vascular disease. In spite of this, the disease continued and a left bundle branch block developed. When heart failure gradually increased, digitalis, squill, mercupurin, ammonium chloride, sedatives and salt-poor diet were tried. The first chest film of March 1946, showed a greatly enlarged heart. There was edema, liver enlargement, and ascites. All medication

was immediately discontinued and the rice diet started. Five weeks later the transverse diameter of the heart was 3 mm. larger, but the patient had lost most of his edema and was no longer dyspneic. The patient ate one pound of rice (dry weight) and one pound of dextrose daily and gained over 7 Kg. during 7 months in spite of the loss of edema. Four months after the start of the diet the transverse diameter of the heart had decreased from 19.8 to 17.9 cm.; after 7 months from 19.8 to 17.4 cm.; after 10 months from 19.8 to 16.5 cm. No medication has been given for the past 3 years. The patient is feeling well and is completely asymptomatic. The transverse diameter of the heart is now 16.3 cm.

Vascular retinopathy responds to the rice diet just as well as myocardial disease. The improvement of the retinopathy occurs no matter whether the blood pressure decreases or not. The author presents the eyeground pictures of 3 patients as examples of the disappearance of papilledema, exudates, and hemorrhages, in spite of persistent hypertension. The first patient is a 56-year-old man with hypertensive vascular disease which had been uncomplicated for from 10 to 15 years. One month before he came to the author and co-workers, he became blind in his left eye. There was a disappearance of massive hemorrhages and exudates in 10 months on the rice diet. The patient regained his eyesight and is now well and active. The blood pressure has decreased but is still not normal. The second case is that of a man who was 47 years old when he went to the author and co-workers almost 5 years ago. He had been suffering from periodic attacks of severe headaches for years, but had known of his hypertension only for 3 months. He had not been conscious of any impairment of vision until he was asked to close his left eye and he found he was unable to read the headlines of a newspaper with his right eye. In one and one-half years of treatment with the rice diet, the exudates in the macula disappeared. The papilledema and hemorrhages cleared up completely and the eyesight was restored. The heart, which was involved, also improved; the inverted T_1 in his electrocardiogram became normally upright. The blood pressure has decreased but is not normal. The third patient is a 51-year-old man with hypertension known for 10 years. He had had progressive heart failure for 7 months. There was hypertensive neuroretinopathy with papilledema, hemorrhages, and exudates, which cleared up in 8 months on the rice diet. The blood pressure did not become normal, but dropped from 217/153 to 188/112.

The author and co-workers classify this type of essential hypertension with several complications as benign because of its slow course, although the term benign may lose its sense when the patient becomes blind from retinal disease or when he dies of heart failure, myocardial infarction, cerebral vascular accident or uremia. Moreover, the possibility always exists that any benign vascular disease may suddenly change into the malignant form.

The effect of the rice diet on patients with full blown malignant hypertension is illustrated by the following examples. The first case is that of a 45-year-old woman who went to the author and co-workers in 1944 with a history of

hypertension of 4 months' duration, apparently malignant from the onset. The eyegrounds showed the typical picture of malignant neuroretinopathy. The patient followed the strict rice diet for one year, then a modified rice diet. The blood pressure decreased from a level of 226/154 to a level of 184/120. The retinopathy healed completely. Not only did the patient not die but after more than 4 and 1/2 years she is up and around and has no complaints. The second patient is a 24-year-old woman who had had an uncomplicated hypertension for 5 years. This benign hypertension had become malignant one month before she went to the author and co-workers (October, 1944). In 24 days on the rice diet, the blood pressure decreased from 233/157 to 118/80. The heart became smaller in size with a change in the transverse diameter of 22 percent in 11 weeks. Papilledema, hemorrhages and exudates disappeared in about 3 months. The eyeground pictures of October, 1948 show that the retinopathy did not recur. The patient not only did not die of her malignant hypertension, but after more than 4 years is now well and doing strenuous work on her farm. The third patient is a 38-year-old man who had had hypertensive vascular disease for one year. The hypertension had been obviously malignant for about 3 months. This case has been chosen as an example of a rather slow response to the rice diet. Definite improvement of the extensive neuroretinopathy was not seen until after one year. The inverted T_1 in the electrocardiogram did not become upright until after 2 and 1/2 years, and it took almost 3 years for the blood pressure to come down to a significantly lower level.

In summary, the author presents a case which shows not only the success but also the possible dangers of the rice diet. The patient, a business man from New York, had had periodic check-ups since 1932 when he was 30 years old. The blood pressure had always been normal until 1941 when a slight elevation was noted. It climbed slowly during the following years. In 1945, it was 170/100, in 1946, 190/100, in the spring of 1947, 190/130. In spite of this, the patient was completely asymptomatic. Both family physician and consultant specialist advised treatment with weight reduction, rest, sedatives and restriction of smoking. In September, 1947, the patient suddenly developed a severe headache with visual disturbances and consulted an ophthalmologist who found retinal hemorrhages, exudates, and papilledema and made a diagnosis of retinopathy of malignant hypertension. Another medical specialist was consulted who found a blood pressure of 202/144, confirmed the diagnosis of malignant hypertension and sent the patient to a surgeon in the New York Hospital for sympathectomy. The surgeon made the same diagnosis and recorded the same findings. After 8 days of observation, a sympathectomy was scheduled. The evening before the operation, the patient decided to try the rice diet first and went to Durham. He presented the typical picture of malignant hypertension. The blood pressure was 210/140, in spite of sedatives; the eyegrounds showed extensive neuroretinopathy. On the rice diet, the blood pressure decreased rapidly. As a matter of fact, it decreased so much that after 3 months the patient had a blood pressure of 85/58 while recumbent and 60/30 while standing.

A marked hypochloremia with elevation of urea nitrogen and nonprotein nitrogen was found and the diet had to be modified greatly by the addition of toast, meat and all kinds of vegetables. The blood chemistry returned to normal and the blood pressure was regulated at a level of 110/77 within 2 weeks. All the signs and symptoms of the malignant hypertension have disappeared; papilledema, retinal hemorrhages and exudates have cleared up completely; the engorged and tortuous veins are smaller in caliber and straighter. However, not only the malignant but also the benign hypertension has disappeared. The blood pressure, which had been above normal for 6 years, is now (one and one-half years after the start of the rice diet) 116/76, although the patient has resumed playing his 18 holes of golf and eats a fairly liberal diet.

Ten years ago it was believed that the presence of advanced neuroretinopathy in malignant hypertension was an ominous prognostic sign indicative of the terminal stage of an irreparable disease. The author's experience with the rice diet shows that not only can patients with so-called benign hypertensive vascular disease be effectively treated even when critical complications are present but also that malignant hypertension, in spite of advanced neuroretinopathy, may either be changed into the benign form of hypertension or be made to disappear completely. The important result is not that the change in the course of the disease has been achieved by the rice diet but that the course of the disease can be changed. (Ann. Int. Med., Nov. '49, W. Kempner)

* * * * * *

The Family Environment of Schizophrenic Patients: It was noted during the treatment of a small series of schizophrenic patients that they had frequently been deprived of at least one parent early in life; and also that the parental home was usually markedly unstable, torn by family schisms and constant emotional turmoil, and frequently patterned according to the whims of grossly eccentric and abnormal personalities. This study, a survey of 50 case histories (of consecutively admitted patients in whom the psychosis had become manifest before the age of 21) in the records of the Henry Phipps Psychiatric Clinic, was then undertaken to evaluate the frequency with which broken homes or seriously disturbed family environments had been noted in those histories of schizophrenic patients.

The influence of the total family life upon shizophrenic patients has been considered in at least 2 books. Rennie, in one, emphasized the role of the family along with other features in the developmental process. He noted that difficulties between parents or the deprivation of a parent seemed to contribute to the insecurity of the children, and that a large number of patients in his study had been in daily contact with psychotic, eccentric, or unstable parents. He stated, "It is impossible to study this material without being impressed by the importance of the family constellations and of the effect of the

maladjustments within the family in contributing to the growing timidities and insecurity of the children."

The early family environment is commonly accepted as a critical force in both normal and abnormal personality development. Numerous other factors, some of which may be of shattering intensity, may disturb the process of personality development, but few can be as long-lasting and as pervasive as the intrafamilial relationships. Here the basic attitudes toward later interpersonal relationships are established; the formation of the projective systems by which the individual perceives the world is begun. It was considered probable, on the basis of preliminary impressions, that there might be, in general, a relationship between the severity of the personality maladjustment and the degree of the family maladjustment, and that the schizophrenic patients would be found to have emerged from early family environments that were very seriously disturbed.

The material in this survey was not expected to yield information with which one could trace in detail how the dynamics of the family configuration influenced the patient's personality development because these case records were compiled by different psychiatrists with differing interests. The advantage connected with this case material lay in the fact that it was gathered prior to the beginning of this investigation, and thus was free from the bias of the investigators. Because the case histories in the Henry Phipps Psychiatric Clinic usually contain reasonably detailed information concerning the parental home, most of them offer sufficient data to permit judgment concerning the character of the family setting. This study was undertaken as a gross survey to check preliminary impressions.

The series for study was limited to patients who were youthful at the time of the onset of the psychosis because their case records contained more information concerning the family environment than did records of older patients. No record was discarded other than those of a few patients who left the clinic before the admission work-up could be completed. There were 27 males and 23 females. Subdivision of the data by sex did not reveal any significant or constant differences. No subclassification of schizophrenia has been made for a variety of reasons, but primarily because little value is placed upon such differentiation, particularly in youthful patients.

The analysis of the data gives a statistical summary of some of the adverse influences to which the patients had been subjected in the early home environment, but it fails to convey the heaping up of deleterious factors which occurred in most cases and which can be understood through the study of individual cases. There were 10 patients in whom none of the various items studied appeared to play a significant role, but these included 5 cases in which no information or relatively little information concerning the home life was

available. Twenty had lost a parent by death or separation prior to their 19th birthday; in 9 cases (possibly 10) this loss was a result of the serious emotional illness of one parent. Twenty of the 33 for whom there was adequate data had parents who were clearly incompatible. Twenty-three had at least one parent who was grossly unstable. Eighteen patients had been raised in a manner which was clearly bizarre or deleterious according to conventional standards. Only 5 of the 50 patients could be considered to have been raised in homes that seemed reasonably favorable and which contained 2 stable and compatible parents until the patient was 18 years old.

Sibling relationships, often extremely significant, have been evaluated in but a few cases, and extrafamilial influences and the idiosyncrasies of individual development have been carefully screened out of the study. The study of the histories of these patients forcefully makes the impression that one patient after another was subjected to a piling up of adverse intrafamilial forces that were major factors in moulding the misshapen personality, and which repeatedly interfered with the patients' attempts at maturation in most discouraging fashion. The survey has been confined to the grossest features of the family environment. In their evaluation the prejudices of the individual physician caring for the patient, or of the writers, play a relatively small role. The intention has been to call attention to the unusually poor family settings in which most schizophrenic patients gain their start in life, and which play a major role in the formation of interpersonal relationships, the projective systems, and the basic attitudes with which they face life and upon which they must build.

Lately, there has been a tendency greater than appears in the literature for those interested in psychotherapy for schizophrenic patients to lay stress upon the pernicious influence of the mothers, the severely rejecting mother, the so-called schizophrenogenic mother. The origins of the schizophrenic reaction pattern have been sought in the infantile relationship with the mother who sympathetically conveys her feelings of rejection to the infant. The authors do not mean to detract from the importance of the early maternal rejection. However, similar rejection or even more serious maternal rejection may be found in other psychiatric syndromes including certain psychosomatic configurations. If the type and degree of rejection suffered by schizophrenic patients can be differentiated from the rejection to which other patients are exposed, it has not been made apparent as yet. This study indicates that less subtle early influences warrant careful attention. The data which have been reported here appear to indicate a high frequency of grossly abnormal parental influences during the childhood of schizophrenic patients. It is suggested that there may well be a direct relationship between the degree of abnormality of the early environment and the seriousness of the emotional illness.

The suggestion is offered that, whereas infantile relationships may start the patient in the direction of asocial development or form an anlage for later

regression to infantile patterns, it may be the serious difficulties that are chronically present through childhood which prevent the patient from fitting into the pattern offered by society. It is apparent from the data studied that the paternal influences are noxious as frequently as are the maternal. The study of some of the cases leaves the impression that, had there been a stable father to offer guidance or to serve as a source for stable identification, the patient would not have been so seriously affected by the mother's difficulties. The conflict within the patient concerned with ambivalent feelings toward one or both parents, the divided loyalties, the unstable identifications, the incorporation of hostility directed toward one or the other parent, all these are often caused by the influences of both parents. In the study of individual patients the gross abnormalities of the family background are not to be disregarded in favor of the more subtle interpersonal relationships, but should serve as background information which may throw light upon the reasons why the patient's emotional illness takes the drastic form.

It is recognized that the study can be taken to indicate that the instability of schizophrenic patients is hereditary. Although all the adverse familial influences are not directly to be attributed to the emotional instability of the parents, the differences between this group as a whole and some group of patients with another ailment might possibly be shown to be largely a matter of the frequency of serious instability of the parents. The problem is difficult to resolve; unstable parents tend to form unsuitable marriages and provide unstable homes. The cycle perpetuates itself.

The question concerning why one child in the family becomes schizophrenic when all have been subjected to similar adverse influences is frequently propounded. The problem diverges from the major emphasis of the paper, but careful attention to 7 case histories which the author presents shows that all 7 patients had siblings. Six of these were considered to have come from adverse environments, and all 6 were clearly brought up under markedly different influences from their siblings. (Am. J. Psychiat., Nov. '49, R. W. Lidz, and T. Lidz)

* * * * * *

Note on Chlordane: The purpose of this note is to supplement and clarify certain information contained in the article entitled Chlordane in Cockroach Control in the Medical News Letter of 2 December 1949.

Chlordane is the common short name assigned by the U. S. Government to the chlorinated hydrocarbon insect and other pest toxicant designated as having the empirical formula $C_{10}H_6Cl_8$. The active toxicant is prepared commercially as Technical Chlordane which is 100 percent active insect toxicant, from which concentrates and ready-to-use insecticides are made. Chlordane can be used dissolved in oil, emulsified in water, or as a powder. The preparations used in the study as reported in the News Letter of 2 December 1949 were made from a concentrate of 20 percent chlordane in oil. In several places in this article this 20 percent chlordane in oil solution was referred to simply as chlordane instead of as a 20-percent solution of chlordane. At the present

time BuMed does not approve of the use of chlordane preparations which contain more than 2 percent of the active toxicant. The only preparation of chlordane which will be initially approved for the Supply Table will be 2 percent chlordane in deodorized kerosene. (Preventive Medicine Div., BuMed)

* * * * * *

Communicable Disease Summary for Week Ended 24 December 1949: Poliomyelitis. For the eighteenth consecutive week, total reported incidence of poliomyelitis in the Nation decreased from the preceding week. The total number of cases reported for the current week is 154 as compared with 243 last week and 90 for the 5-year median (1944-48).

Other Communicable Diseases. Infectious encephalitis, measles and typhoid fever (including paratyphoid fever) increased for the current week over the preceding week. In addition, the cumulative total for these diseases exceeds the total for the corresponding period last year as shown in the following table.

Diseases	Current Week	Last Week	Cumulative Total Current Year	Cumulative Total Last Year
Encephalitis, infectious	12	7	750	561
Measles	2,008	1,774	604,870	596,757
Typhoid fever (incl. paratyphoid)	52	33	3,592	3,554

Other than the above mentioned, no other notifiable diseases increased over the preceding week. Diphtheria, influenza, scarlet fever, and whooping cough, in addition to decreases for the week, showed decreases in the cumulative totals for the year as shown in the following table.

Diseases	Current Week	Last Week	Cumulative Total Current Year	Cumulative Total Last Year
Diphtheria	118	153	7,878	9,523
Influenza	2,289	1,441	103,777	172,264
Scarlet fever	1,083	1,292	72,891	76,011

One case of anthrax was reported in Pennsylvania, no smallpox was reported, and 551 cases of influenza (type A) were reported in Hawaii.

Rabies in Animals. Of 41 states and the District of Columbia reporting on rabies in animals, 23 states and the District of Columbia reported no cases. The remaining 18 states reported 103 cases with the largest numbers in Texas (23), Georgia (11), West Virginia (11), and New York (10). The total number of rabies in animals reported to date for 1949 is 5,553. (Issued by National Office of Vital Statistics, U. S. Public Health Service, Federal Security Agency. Based upon preliminary reports by telegraph from State health officers)

List of Recent Reports Issued by Naval Medical Research Activities:

Naval Medical Research Institute, NNMC, Bethesda, Maryland

Project	Report No.	Date	Title
NM 004 006.01 (formerly NM 000 003)	2	6 Oct. '49	Black Body Radiometer, A 4π Receiver for Measurement of Total Radiated Heat Output
NM 005 004 (X-535)	23	24 Aug. '49	The Albino Mouse as a Laboratory Definitive Host for *Schistosoma mansoni*
NM 005 010 (X-756)	8	23 Aug. '49	Field Trial of *Shigella flexneri* III Vaccine. IV. Preliminary Report of Cultural Results
NM 006 012.08 (formerly NM 007 039)	25	1 Sept. '49	Sulfhydryl-Containing Agents and the Effects of Ionizing Radiations. I. Beneficial Effect of Glutathione Injection on X-Ray Induced Mortality Rate and Weight Loss in Mice
MR-49-8	-	5 Oct. '49	Tests to Determine Suitability of Burnt Coral as a Dentifrice

Naval Medical Research Unit No. 4, U.S. Naval Training Center, Great Lakes, Ill.

NM 005 051.04 (formerly NM 007 019)	1	20 Oct. '49	Studies on Rheumatic Fever Comparative Value of the Weltmann Serocoagulation Reaction and the Sedimentation Rate (Cutler) in Determining Activity of the Rheumatic Process

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

NM 005 052/2	2	13 Dec. '49	Study and Evaluations of Hand-Operated, Portable Larviciding Sprayers

Naval Medical Field Research Laboratory, Camp Lejeune, N. C. (Cont.)

Project	Report No.	Date	Title
NM 005 052/2	3	23 Dec. '49	Test of Quartermaster Corps Army Sprayer, Aerosol, Hand-Operated EX49-1
NM 005 052/7	1	2 Dec. '49	2,2-Bis(p-Chlorophenyl)-1,1, 1-Trichloroethane (DDT) Determinations in Tissues, Body Fluids and Excreta of Human Subjects
NM 005 052/12	1	12 Nov. '49	Portable, Collapsible, Two-Hole Field Latrine
NM 005 052/13	2	30 Nov. '49	Vacuum Spark Discharge with Flowing Liquid Electrode as High Energy Radiation Source for Photochemical Reactions and Biological Inactivations
NM 011 021	24	7 Oct. '49	Test of Experimental Field Scrub Sink

School of Aviation Medicine and Research, NAS, Pensacola, Florida

NM 000 007	1	30 Sept. '49	Radioactive Monomolecular Layers

School of Aviation Medicine and Research, NAS, Pensacola, Florida and Tulane University of Louisiana

NR 140-455 NM 001 037	Joint No. 8	1 Dec. '49	The Effect of Visual Stimulation on the Duration of Postrotational Apparent Motion Effects
NR 140-455 NM 001 037	Joint No. 9	17 Nov. '49	The Perception of the Vertical V. Adaptation Effects
NR 140-455 NM 001 037	Joint No. 10	22 Nov. '49	The Perception of the Vertical VI. Adjustment to the Vertical with Normal and Tilted Visual Frames of Reference

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

Project	Report No.	Date	Title
NM 000 009	3	15 Sept. '49	A Method for Calculating the Effect of Filters on Color Vision
NM 002 015.03	1	22 Oct. '49	1. Preliminary Report on Underwater Swimming while Breathing Oxygen
NM 003 018	1	10 Aug. '49	A Battery of Pass-Fail Tests for Detecting Degree of Color Deficiency
NM 003 041.09 (formerly NM 003 024)	2	1 Nov. '49	Mapping the Central Scotoma of the Dark Adapted Retina: Comparison of a Moving Stimulus with a Stationary Presentation
NM 003 041.27	1	2 Nov. '49	Suggestions for Working with Celloidin with Special Reference to the Inner Ear

Naval Medical Research Unit No. 3, Cairo, Egypt

NM 005 050.19	1	13 Dec. '49	Test of Quartermaster Corps, Army, Low Pressure Aerosol Dispensers
NM 005 050.19	2	13 Dec. '49	Test of Quartermaster Corps, Army, Sprayer, Aerosol Hand-Operated EX49-1
NM 007 082.04	1	12 Dec. '49	Kidney
NM 007 082.12 (formerly NM 007 032)	12	28 Nov. '49	Clinical Observations on Cholera Obtained During 1947 Egyptian Epidemic, Including Simplified Methods for Hydration

Note: Those interested in seeing copies of the complete reports should address their request to the research activity from which the report originates.

New Correspondence Course Available to Reserve Medical Department Personnel: The following correspondence course is now available for distribution and may be obtained from the Bureau of Medicine and Surgery by qualified personnel upon request:

Title of Course	Promotion Units	Retirement Points	Eligible Personnel
Medical Department Orientation	1	12	MC, DC, MSC, NC, HC (officers and enlisted)

* * * * * *

Training Duty for Reserve Entomologists and Malariology Technicians: Beginning 1 January 1950, the 2-week training program for Naval Reserve entomologists and malariology technicians was resumed at the Naval Air Station, Jacksonville, Florida, and will continue through 30 March 1950. The training periods are scheduled for the first and third Wednesdays of each month. The First, Third, Fourth, Fifth, Sixth, Eighth, Ninth Naval Districts, and Potomac River Naval Command have been assigned a limited quota for personnel desiring to attend this course. Naval Reserve entomologists and malariology technicians who desire to attend this annual training duty program should submit their request to their district commandant.

* * * * * *

Course in Medical Aspects of Special Weapons and Radioactive Isotopes: The Bureau of Medicine and Surgery announces a course of instruction in Medical Aspects of Special Weapons and Radioactive Isotopes. This course is to be conducted at the U. S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland. It will commence Monday, 23 January 1950 and continue through Friday, 27 January 1950.

The purpose of one phase of this course is to present the problems likely to be confronted and technics to be employed by medical and dental officers in the field of radioactivity.

The speakers will be outstanding men in their specialties; hence an interesting and informative presentation is assured.

This course is conducted primarily for the benefit of inactive Reserve medical and dental officers; however, a limited number of medical and dental officers on duty in the Washington area may attend providing arrangements can be made by the individuals with their local commanding officers and the Commanding Officer of the U. S. Naval Medical School, Bethesda, Maryland.

Inactive Reserve medical and dental officers who desire to attend this course should submit a request for training duty to the commandant of their local naval district. All requests should reach the commandants' offices at the earliest practicable date. The facilities available at the Naval Medical School make it necessary to restrict attendance to 200 Reserve medical and dental officers.

* * * * * *

Current Policy Pertaining to Out-Service and Short Courses of Instruction: For a considerable length of time the tuition costs of various courses of instruction offered during the evening hours and of various short courses of instruction on a full-time basis offered by civilian institutions in which Medical Department personnel have been enrolled have been defrayed by BuMed out of training funds.

Because of current budgetary limitations, the number of approvals for such courses of instruction in which the approval carries with it the defrayment of the tuition or enrollment costs by BuMed out of training funds will in the future be markedly curtailed. In the majority of instances approvals for short full-time courses of instruction will carry only the authorization for attendance; the cost of the enrollment fee to be defrayed by the participating individual. The cost of evening courses will likewise be defrayed primarily by the participant himself.

This Bureau regrets the necessity of the curtailment of funds in this regard and, although this announcement is not to be construed as an effort to encourage Medical Department personnel to assume expenditures formerly made from BuMed training funds, the effort evinced by personnel requesting the participation in full-time courses of instruction under these conditions cannot be interpreted as other than a credit to the Medical Department. (Professional Div., BuMed)

* * * * * *

BUMED CIRCULAR LETTER 49-160 8 December 1949

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: Sanitary Reports; Correction to Preparation Instructions

Ref: (a) BuMed CircLtr 49-148; N.D. Bul. of 15 Nov 1949, 49-812

1. The following correction is to be made to reference (a):

In enclosure A, under table #1, correct footnote 1 to read as follows:

[1]Compute rates for each month as follows:

$$\frac{\text{Number of admissions (A, ACD, AD, and EC) for month} \times 12 \times 1000}{\text{Average strength for month}} = \text{Annual rate per 1000}$$

C. A. Swanson

* * * * * *

BUMED CIRCULAR LETTER 49-161 9 December 1949

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: Operation, Care, and Maintenance of Medical and Dental Equipment

Ref: (a) Navy Regulations, 1948, Articles 0712, 0903(9), and 1220

1. There is urgent need to re-emphasize the importance of and the responsibilities for proper care and maintenance of medical and dental equipment. In the care of the sick, it is imperative that equipment, apparatus, and appliances be maintained in the highest degree of readiness for instant service.

2. Detailed instructions relative to proper operational maintenance and upkeep are furnished field activities with all special equipment and must be used to familiarize operators with the proper operation, storage, maintenance, and care of such equipment. Pertinent information should be abstracted from these instructions into an easily readable form which operating personnel should be required to read and follow.

3. All instructions, manuals, wiring diagrams, parts listings, and pictorials received with equipment should be clearly labelled and retained as long as such equipment is in operation or on the ship or station in an operable status.

4. All officers having direct cognizance of medical and dental equipment should require that all persons properly discharge their responsibilities in connection with the care and maintenance of government property. In addition to stating this general responsibility of all persons, specific responsibilities, as outlined in subparagraphs (a), (b), and (c) below, should be promulgated by appropriate command directives.

(a) Operator Maintenance - Each individual operating or using any kind of equipment is responsible for the following in connection with equipment:

(1) Cleaning.
(2) Oiling and watering.
(3) Taking proper preservative and protective measures.

(4) Turning off apparatus when not in use.
(5) Staying within the rated capacity.
(6) Following all instructions issued with the equipment or furnished by qualified personnel.
(7) Reporting promptly all defects and any repairs, adjustments, or calibrations required.
(8) Compliance with all safety regulations and the prompt reporting of any condition which might tend to increase the hazards of operation.

(b) Technical Maintenance and Repair - Qualified medical and dental repair men (either attached or detailed on temporary duty from appropriate commands) are responsible for:

(1) Accomplishing repairs, adjustments, and calibrations to the extent of their technical capabilities.
(2) Recommending any additional instructions to operators or general maintenance personnel which are deemed advisable in order to improve operator and/or general maintenance.
(3) Recommending requests for additional technical assistance when necessary (service or commercial).
(4) Reporting to the head of the division or service any apparent failures on the part of operators or users to follow the established instructions.

(c) General Maintenance and Repair - (for activities under management control of BuMed only). Maintenance personnel (electricians, plumbers, carpenters, painters, mechanics, etc.) are, within the limits of their capabilities, responsible for:

(1) Accomplishing repairs, adjustments, and calibrations required by reports of defects from operators.
(2) Recommending any additional instructions or check-off lists for operators which are deemed advisable in order to improve operator maintenance.
(3) Recommending requests for technical assistance when indicated.
(4) Reporting to the head of the division or service, any apparent failure on the part of operators or users to follow the established instructions.

C. A. Swanson

* * * * * *

BUMED CIRCULAR LETTER 49-162 9 December 1949

From: Chief, Bureau of Medicine and Surgery
To: All Holders of the Manual of the Medical Department

Subj: Advance Change 3-17, MMD, 1945

Encl: (1) Subject Change

1. The enclosed Advance Change 3-17 is effective immediately. It shall be recorded on the "Record of Changes" page in the Manual. The individual paragraph changes are to be inserted in their proper places in the Manual text.

C. A. Swanson

* * * * * *

BUMED CIRCULAR LETTER 49-163 9 December 1949

From: Chief, Bureau of Medicine and Surgery
To: All Holders of the Bulletin of Bureau of Medicine and Surgery Circular Letters

Subj: BuMed Circular Letters; Cancellation of 47-141 and 49-68

By this letter, BuMed Circular Letters #47-141 and #49-68 are canceled for the reason that current reporting requirements are covered by par. 5145c (Advance Change 3-17) Manual Medical Department.

* * * * * *

BUMED CIRCULAR LETTER 49-164 9 December 1949

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: Identification of Deceased Personnel of the Department of Defense

This letter, a copy of which appears in the 15 December 1949 Navy Department Bulletin, states (1) that the Office of the Quartermaster General of the U. S. Army, because of its special experience in the identification of deceased personnel during the late war, developed technics and personnel trained in their use which are made available to the Navy on a reimbursement basis, and (2) that, because of the limitation of funds, requests by the Navy for permission to use those services will not be made until every possible effort has been made locally to accomplish segregation and identification, and then prior approval via dispatch must first be obtained from BuMed (Code 214) at which time instructions relative to financial arrangements will be issued.

* * * * * *

BUMED CIRCULAR LETTER 49-165 13 December 1949

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: Qualifications for Advancement in Rating of Enlisted Hospital Corps Personnel

Refs: (a) Manual of Qualifications for Advancement in Rating, NavPers 18068
(b) Article C-7206(6), BuPers Manual
(c) BuMed CircLtr 49-118; N.D. Bul. of 30 Sep 1949, 49-687

1. Reference (c) is hereby canceled.

2. In clarification of the instructions contained in reference (b), it is the desire of the Bureau of Medicine and Surgery that medical officers, dental officers, or examining boards assigned to determine the professional qualifications of enlisted personnel of the Hospital Corps for advancement in rating should not recommend those who in their opinion are deficient to the extent of attaining a mark of less than 2.5 (on the basis of 4.0 perfect) in any one of the subtopics listed in the applicable sections of reference (a).

C. A. Swanson

* * * * * *

BUMED CIRCULAR LETTER 49-166 15 December 1949

From: Chief, Bureau of Medicine and Surgery
To: All Ships and Stations

Subj: Radioactive Isotope Therapy Technic; Hospital Corps Specialization Course in

1. A formal course of instruction in Radioactive Isotope Therapy Technic for enlisted personnel of the Hospital Corps has been established at the U. S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland.

2. The length of the course will be of six (6) months' duration. Candidates for the instruction must be x-ray and photofluoroscopy technicians and suitably qualified.

3. Hospital Corpsmen successfully completing the prescribed course of instruction will be awarded a Certificate of Special Instruction and will be officially designated as Radioactive Isotope Technicians.

4. This procedure is in accordance with the Navy personnel accounting system and the "Manual of Enlisted Navy Job Classifications." C. A. Swanson

NOTE: This is the course referred to on page 28 of the 16 December 1949 issue of the Navy Medical News Letter.

* * * * * *

BUMED CIRCULAR LETTER 49-167 20 December 1949

From: Chief, Bureau of Medicine and Surgery
To: Commandants, All Naval Districts and River Commands

Subj: Survey of Venereal Disease Prophylaxis Stations in Cities Adjacent to Naval and Marine Corps Activities

Encl: (1) Supply of survey reporting forms.

This letter (1) states that many off-station VD prophylactic facilities are not being utilized sufficiently to warrant their continued operation and (2) requests that addressees furnish information and comment on facilities under their cognizance, not later than 1 March 1950.

* * * * * *

BUMED CIRCULAR LETTER 49-168 Joint Letter 20 December 1949

From: Chief of Naval Personnel
Chief, Bureau of Supplies and Accounts
Chief, Bureau of Medicine and Surgery

To: All Ships and Stations

Subj: Disability and Death Benefits for Naval Reservists and Their Beneficiaries under Public Law 108, 81st Congress, Approved 20 June 1949; Administrative Regulations for

Refs: (a) Public Law 108, 81st Congress.
(b) AlStaCon 151545Z of July 1949.
(c) AlStaCon 101415Z of August 1949.
(d) Articles H-5303, H-5306, and H-5307 BuPers Manual.
(e) Articles H-5302, H-5304, H-5305, and H-5308, BuPers Manual.

Encl: (A) Sample form, Notice of Eligibility for Disability Benefits.

This letter, consisting of 19 pages plus 4 pages for the enclosure, appears in full in the 31 December 1949 Navy Department Bulletin. It contains administrative regulations and payment procedures applicable to officers,

nurses, warrant officers, and enlisted personnel of the Naval Reserve who are called or ordered by the Federal Government to perform active duty for training or inactive-duty training, and who become entitled to disability benefits under Public Law 108, 81st Congress (reference (a)). In order for a reservist to be entitled to the benefits of that Act, the disabling cause must occur in line of duty while the reservist is employed on active duty, active duty for training, or inactive training duty.

* * * * * *

BUMED CIRCULAR LETTER 49-169 30 December 1949

From: Chief, Bureau of Medicine and Surgery
To: All Holders of the Bulletin of BuMed Circular Letters

Subj: BuMed Circular Letters, Cancellation of

This letter states that the following BuMed circular letters have served their purpose and are therefore canceled: 45-276; 46-29; 47-103, 104, and 160; 48-21, 22, 96, 98, 102, and 130; and 49-5, 9, 23, 24, 28, 30, 39, 40, 48, 56, 73, 76, 89, 93, 94, 121, 123, and 163.

* * * * * *

SECNAV LETTER P13-7 N.D. Bul. 49-882 10 December 1949

To: All Ships and Stations

Subj: Procedure for the Disposition of Cases of Homosexuality Involving Naval Personnel

Refs: (a) SecNav ltr of 14 Jul 1949; N.D. Bul. of 31 Jul 1949, 49-514
(b) Chairman of Personnel Policy Board memo to Secretaries of the Army, the Navy, and the Air Force, of 11 Oct 1949, establishing policy re discharge of homosexuals from the armed services. (Copies not available for distribution and not needed by addressees.)

This letter, a copy of which appears in full in the 15 December 1949 Navy Department Bulletin, (1) cancels reference (a) and (2) consonant with reference (b) outlines the Navy Department's policy and the administrative procedure for disposition of personnel in cases involving homosexual tendencies or acts.

* * * * * *

SECNAV LETTER N.D. Bul. 49-883 13 December 1949

To: All Ships and Stations

Subj: Reduction of Medical Facilities at Dispensaries

This letter, a copy of which appears in full in the 15 December 1949 Navy Department Bulletin, (1) states that in the interest of reducing the overall cost of medical care by reduction of facilities, certain dispensaries are thereby disestablished as of 15 December 1949 and that the personnel who receive their medical care from these dispensaries will obtain such care from the indicated nearby station, (2) reduces the bed capacity of the dispensaries of certain listed activities commensurate with the usual patient load, and (3) states that the bed capacities of other dispensaries not listed therein will remain unchanged.

* * * * * *

BUPERS CIRCULAR LETTER 49-201 9 December 1949

To: All Ships and Stations

Subj: Retirement or Separation for Physical Disability

Refs: (a) BuPers CircLtr 245-48; N.D. Bul. of 31 Dec 1948, 48-980.
(b) Public Law 351, Title IV, 81st Congress.

Encl: (A) Summary of ref. (b).
(B) Sec. 511, Title V, Public Law 351, 81st Congress.

1. Reference (a) insofar as it pertains to physical retirement is hereby superseded and canceled. The remaining portions of reference (a), concerning voluntary, involuntary, and age retirement, and the honorary retirement list remain in effect and will be restated at a later date.

2. Reference (b), which became effective 1 October 1949, revises the whole concept of physical retirement in that (a) officer and enlisted personnel of the Navy, Regular and Reserve, are equally entitled to physical retirement, (b) eligibility for physical retirement is based on a combination of degree of disability and years of service, (c) under certain conditions personnel may be separated rather than retired for physical disability, and (d) a temporary disability retired list is established.

3. Enclosure (A) is a summary of the pertinent provisions of reference (b). No attempt has been made therein to interpret Public Law 351, 81st Congress. Enclosure (B) is included to facilitate computation of service.

4. At such later date as is considered advisable, additional information will be distributed. Appropriate implementing regulations and procedures are being established and will be published in the near future. BuPers. J. W. Roper

Note: A copy of this letter together with enclosures A and B appear in the 15 December 1949 Navy Department Bulletin.

* * * * * *

BUPERS CIRCULAR LETTER 49-210 15 December 1949

To: All Ships and Stations

Subj: Information Regarding Procurement of Personnel for Appointment to the Rank of Ensign, Supply and Administration Section, Medical Service Corps

Refs: (a) Public Law 337, 80th Congress (as amended).
(b) BuPers ltr Pers 362 AO, of 28 Oct 1949, approved by SecNav 3 Nov 1949.
(c) Record of Proceeding of Medical Service Corps Review Board, approved by SecNav on 29 Aug 1949.

This letter, a copy of which appears in full in the 15 December 1949 Navy Department Bulletin, states that Section 203 of Title II of reference (a) authorizes the appointment of personnel to the grade of ensign in the Supply and Administration Section of the Medical Service Corps from those persons serving as warrant officers and commissioned warrant officers of the Hospital Corps of the Regular Navy and from other persons who possess such physical and other qualifications for appointment as may be prescribed by the Secretary of the Navy. This has been interpreted to include chief petty officers and petty officers, first class, of the Hospital Corps, USN, on active duty. It is anticipated that at least 50 percent of the vacancies in the grade of ensign, in the Supply and Administration Section of the Medical Service Corps, will be filled annually by procurement from Regular Navy enlisted Hospital Corps personnel. The letter further states that in accordance with reference (a) as implemented by reference (b), a procurement program to obtain personnel for appointment to rank of ensign in the Supply and Administration Section of the Medical Service Corps is therewith established and that the program will be conducted annually under the rules and regulations promulgated in paragraphs 3 and 4 therein.

* * * * * *