2. Spinal puncture should be employed in all cases of syphilis, before they are discharged as cured. This procedure should be done at least six months after cessation of treatment.

3. Early diagnosis is most desirable and can be obtained not infrequently by spinal puncture only.

4. Changes in cytology in the fluid can be shown to disappear under ordinary treatment.

5. Many cases of established tabes and central nervous syphilis show improvement in symptoms and controlling laboratory findings under specific arsenical treatment.

6. The intravenous method is advised and should be rejected only when ineffectual after fair trial. In the latter instance combined treatment is employed.

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GRADED EFFORT IN CONVALESCENCE.

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THE writer has in his possession a copy of a wash drawing by Whistler, showing a beautiful young woman reclining languidly on a silken couch and fingering a magazine. It is the artist's idealization of convalescence. There will be flowers, drives in the park, then life and full health. Those of us who know convalescence at first hand know that it is not always like that, not even among the well-to-do and the fortunate. And we know that with men and women who must work to live, convalescence may mean a terrible struggle against odds, with many final surrenders.

Since the war, medical men and people generally, have taken a new interest in the problem of human reconstruction. The situation is no worse than it always has been, but our sympathies have been touched, our imaginations aroused, and we now realize that we have left too many handicapped men and women to shift for themselves after the short period of acute illness.

Convalescence is, of course, a very general term; the period presents as many variations as there are patients and disabilities. A full consideration of convalescence would involve a study as wide as the field of medicine. For the purposes of this paper, I would discard the endless variations and come down to the bare fact of physical and psychic weakness, the functional unresponsiveness and overwhelming fatigue which follows any severe illness. This great common factor we may deal with directly and positively. We cannot in practice avoid

the consideration and treatment of a thousand and one details and complications, but we shall be wonderfully aided in our management of convalescence if we are able to think of general disability and helplessness as in a sense a separate problem.

Without going deeply into psychology or physiology, we know well enough that the best way to restore lost or impaired function is by use. Rest must play its part, the exercise must be judicious, of course, but a man does not walk without using the muscles of his legs, he does not progress much toward general effectiveness without voluntary effort. We can supply some of the necessary activity through the various forms of physiotherapy, but in the end the patient must use his own strength if he is to be well, if he is to become once more independent.

This is the principle of occupational therapy, the art of applied work supplementing the older idea of physical exercise. It is physical exercise, but because it uses several functions at once it develops the indefinable quality we call efficiency. The ability to accomplish definite and prescribed tasks without fatigue, becomes a reasonably exact gauge of convalescent progress.

Doubtless the natural tendency of the disabled organism is automatically to resume exercise and effort after the shock of injury and the immediate effects of illness have passed. But there are many pitfalls in the way, sheer weakness, impaired nutrition, discouragement—we shall often be called upon to furnish the incentive and initiative. Very often we must stand by during the whole of convalescence lest the patient give up altogether and go drifting back into utter helplessness. The "standing by" may well mean more than cheerful encouragement, more than medical and surgical treatment; it must often include detailed instructions and a full program of progression.

If we were not dealing with discouragement and the inertia that comes of long illness, our principle might proceed uninterruptedly and well even in the face of crippling injury. But in practice, all the tact and skill available from experience is often necessary to make the start and to maintain progress. We have constantly before us the blocking influence of fatigue and discouragement. But we have to aid us the fact that exercise and improvement of one function is bound to stimulate and develop all the others. Thus it happens that the successful use of the fingers in some simple piece of knitting, the primitive exercise of one set of muscles, will send a current of life into every other part, may stimulate the will itself to further reconstructive effort. The occupational therapy, as well as the physiotherapy aide, must always assume that fatigue and discouragement stand squarely across the path, fatigue of muscles and of the will. Any attempt to force the

issue and to hurry the patient on to recovery may result in complete deadlock and even serious retrogression. Fatigue is psychological as well as physiological. Just as normal muscles may tire and finally cease to respond even to electrical stimulation, so the will ceases to operate and must be given rest before progress can be made. Every time we go on until the fatigue limit is reached, we must wait a disproportionately long time for recuperation. Experience teaches that this is true to some extent whether we are at work far down the scale, at the very beginnings of effort or further along where the work prescription is complex and comprehensive.

In the interests of progress, then, it is evident that we must plan a graded system which will avoid discouraging setbacks and provide an uninterrupted sequence. In my own practice, which has been, of late years, almost wholly among convalescents, or at least in the treatment of continued illness, I have long since ceased to expect a little more of the patient each day. It is easy to fall into this error, but the consequences may be disastrous. A little more work, a little more effort each day, too soon reaches the limit of physical or psychic fatigue. It is far wiser to allow only the same degree of effort each day for some time before adding to the requirement. Progression of this kind may be represented by a series of planes or ramps. The other kind, the dangerous sort, is more like a flight of steps. The former system will lead us far if it is gradual enough; the latter frequently brings about collapse and failure.

Fortunately, it does not matter much what the effort is so long as it enlists the interest of the patient and lends itself to such a graded arrangement. Since physical work is the most easily available and possesses the merit of easy flexibility, we have chosen the handicrafts as our allies in occupational therapy. In the beginning and for the same reason that we use light work, we must choose simple processes and a type of work that shows quick and pleasing results. The early convalescent will soon be discouraged if we start him on some difficult and exacting problem; a problem requiring much patience and practice for its accomplishment. The first tasks should be possible for the patient while he is still in bed. But we must not make the mistake of keeping him too long upon the childish things. A progress too slow and one requiring too little effort is just as harmful as a too rapid or too difficult procedure.

I like to think of the handicrafts which we use in occupational therapy as equivalents. We may well make them worth while in themselves but, after all, it is strength, patience and initiative which we are trying to develop. When the patient can work at hand weaving or basketry steadily and for hours with interest

and without fatigue, when he begins to take real pride in his work, we may be sure that he is equal to the equivalent expenditure of effort in other more vital matters of life. We may have produced an expert hand weaver and that is well, but if we have at the same time restored a housewife to her old effectiveness, that is better.

For reasons of clearness and illustration, I have dwelt upon the difficulties of extreme cases in which the start must be made with the utmost caution. Many a convalescent has never reached the low levels and yet does not get over the last rise to efficient life unless some therapeutic occupation is prescribed and carried out. The choice of occupations and the degree of effort involved must often be somewhat arbitrary. Sometimes after long continued idleness of convalescence it is only necessary to arouse the interest of the patient in a novel exercise of his faculties through prescribed work. The progression may be left to itself. But such a situation is rare. I cannot emphasize too strongly the wisdom of careful and progressive prescription. Enthusiasm too often wrecks the course of occupational therapy, enthusiasm with the sudden reaction of fatigue and ennui. Almost never would I say to a patient recovering from any illness, "How would you like to go into the shop and work for a while with the others?" That would be too much like saying, "Wouldn't you like to take some medicine?" There is quite an assortment in the dispensary, go in and make your choice; take as much as you like." No,—work as remedy is too valuable to be turned into a diversion. Diversion it often is, and happily so, but that is the least of its attributes.

We cannot long consider the value of work as a remedy without making some estimates of rest and play in their relation to convalescence. Here I think the same principle of dosage holds. Left to himself, the patient almost never makes a wise division of his time. Too often we say to the convalescent, "Now you are better, walk a little, play a little, rest as much as you need." He does not know how much rest he needs. If he is ambitious, he will overdo the play or the work. If he is timid or easily tired, the chances are he will rest altogether too much, perhaps retarding recovery indefinitely. The rest should be measured and the play should be measured until all need of caution and reserve is past, until the patient is fully restored.

I have rarely had a patient who was not grateful for a careful regulation of his day. It is an immense relief to the average convalescent to be told exactly what to do and when. One of the most fatiguing and demoralizing elements of convalescence is uncertainty. The patient does not know, is not sure what he may wisely do. A series of

plunges of more or less haphazard efforts with accompanying failure and fatigue, will not infrequently result in a loss of self-confidence which is very hard to restore.

It will be well, then, if we take the period of convalescence more seriously than has been our habit, if we leave as little as possible to chance or the judgment of the patient. We shall not always be able to restore efficiency and normality in the victim of disease or of accident. Many permanent handicaps must remain, but we have at our disposal a very rational and potent system of reconstruction in prescribed work. By the graded effort which we demand of our helpless patients we may often restore functions which might otherwise have been lost forever. We must remember that this powerful expedient can do harm as well as good, that it may discourage as well as stimulate and develop. Nothing but experience can teach us when and how to begin with the individual patient, or how rapid a progression of effort may wisely be used. It is safer to be well under the maximum load than even near it.

We have now at our disposal for hospital and sanatorium auxiliary the so-called occupational aide, a type of social worker, whose increasing experience with different kinds of disability fits her to deal with this problem of work as a remedy. These aides will become more valuable as time goes on, but the doctor himself must learn to direct them intelligently if we are to have the full benefit of a great principle which we have ignored or neglected too long.

Occupational therapy is not a cure-all, but it has a definite and important place in the field of modern medicine. We can no longer afford to turn loose our convalescents of any sort without at least a testing out of their resistance to the demands of life. There is no better method, no more practical way of making such a test than through the graded efforts of prescribed work.

The lady of Whistler's picture is charming. I would not disturb her serenity, but I wish that some great artist would paint the occupational aide patiently guiding the slowly moving fingers of some battered industrial soldier or some nerve-racked woman through the intricacies of an unfamiliar task—the look of pathetic relief on the face of the patient who discovers that after all there is hope in life, some chance of ultimate recovery.

IMPORTANT NOTICE.

Announcement of meetings to be held on and after next Thursday should reach the desk of the Editor of the JOURNAL not later than next Saturday before noon. The printers do not work Saturday afternoon and the material is locked up in the forms on Monday, and goes to press Tuesday morning. The wrapping and mailing begins Wednesday. Please forward copy early.

OBSERVATIONS ON THE EFFECT OF *B. ACIDOPHILUS* MILK UPON CASES OF CHRONIC CONSTIPATION.*

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THE milk feeding experiments presented in this paper were the direct outcome of the researches which have been conducted for several years at the Sheffield Scientific School, Yale University, on the implantation of *Bacillus acidophilus* within the intestinal tract of both the albino rat and man. The chief object of this investigation was to study the therapeutic value of the oral administration of *B. acidophilus* milk in cases of chronic constipation. It was anticipated, in conformity with the views of Rettger and Cheplin that the pure *B. acidophilus* milk culture, in virtue of the large number of viable organisms it contains, capable of implantation and colonization within the alimentary canal, might exert a beneficial influence in relieving obstinate and chronic constipation, if regularly supplied in sufficient quantities, depending upon the individual requirements of the patients.

Throughout the different series of experiments the plan of the investigation was essentially the same, and, but for certain minor details, was as follows:

The *B. acidophilus* was prepared in accordance with the method advocated by Cheplin and Rettger in 500 c.c. amounts, and living 24 hour cultures were administered daily to the patients. With but few exceptions 500 c.c. of the milk product reinforced with 100 grms. of lactose were ingested by the patients each day in two equal doses.

At no time during the investigation were any special or modified diets prescribed, and the sour milk was consumed regularly in addition to the ordinary daily dietary régime. It was definitely arranged that no cathartics or laxatives be taken by any patient throughout the entire experimental period. In the event of slow response, enemata, consisting of two parts of the *B. acidophilus* milk and one part of water, were resorted to and these were given in but two instances.

Bacteriological examinations of the stools were made daily and the method employed by Cheplin and Rettger was strictly adhered to.

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This investigation was conducted at the Connecticut State Hospital in cooperation with the Department of Bacteriology of Yale University.