lesions did not appear and, on the whole, toxic manifestations were less marked.

The fact that little response was obtained from the administration of sulphonamides in these cases would appear to absolve the streptococcus as the morbid factor, but cases of streptococcal infection are frequently seen in which no appreciable benefit has been obtained from this group of drugs, and, as has recently been shown, strains of haemolytic streptococci completely resistant to them do occur. Francis (1942) describes several cases of wound infection by a Group A Type 12 streptococcus resistant to sulphonamides, lack of inhibition of growth being demonstrable *in vitro*. This resistance is, however, not a specific type characteristic, and it seems likely that other types may, under suitable conditions, produce sulphonamide-resistant strains. However, quite apart from the possible presence of such a strain in these cases, the fact that a generalized toxæmic condition was well established lessened the clinical value of sulphonamide administration. Certainly, the problem becomes very different from one in which the streptococcus is proliferating in an open wound.

While it is realized that in these three cases there is not sufficient evidence to justify the conclusion that the streptococcus was the specific causative organism—in fact, a neurotropic virus might well be implicated—it is suggested that its presence influenced the clinical picture to a marked degree; and, although it is not possible to make a diagnosis until more is known of the condition, it is considered that this acute ulcerative stomatitis with its concomitant toxic syndrome constitutes a well-defined clinical entity.

Summary

In a series of 90 cases of ulcero-membranous stomatitis recently investigated 87 were classified as Vincent's disease. The remaining 3, which differed materially from the others, showed marked toxæmia and failed to respond to sulphanilamide and sulphapyridine; improvement, however, followed blood transfusion. In each of these 3 cases streptococci were isolated from the mouth lesions.

I wish to thank Wing Commander I. MacKay and Wing Commander K. Robson for their help and encouragement, and Squadron Leader R. Wynroe for the photography.

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GROUP PSYCHOTHERAPY

BY

MAXWELL JONES, M.B., M.R.C.P.Ed., D.P.M.

Group treatment if effective would have a particular value in wartime, when there is a relative shortage of doctors and, potentially at least, an increase of patients with neurosis. The number of neurotic patients who can be adequately dealt with by one doctor varies according to the type of patient and the type of treatment practised by the therapist, but, in general, 25 to 30, with an average duration of stay in hospital of about six weeks, is a reasonable estimate.

The effort-syndrome unit at the hospital to which I am attached has 100 beds and comprises patients with various mild neurotic states, all of whom are carefully examined to exclude organic disease, and all of whom have fatigue as their main symptom. They show various anomalies of vegetative function such as palpitation, postural giddiness, labile blood pressure, tachypnoea, hyperventilation, frequent sighing, sweating of an emotional distribution, hot flushes, cramps, and paraesthesiae. This vegetative lability has frequently been present since childhood, and while individual psychotherapy may lessen psychic anxiety and effect personality change the somatic symptoms often remain very resistant to treatment.

Patients with effort intolerance were first treated here by the usual psychotherapeutic measures, in addition to the general

psychiatric methods, an attempt being made to get at any major emotional factors which might help to explain the development of the patient's effort phobia. In the resulting discussion and explanation it was necessary to deal with the cardiac neurosis that was usually present. This necessitated some simple explanation of the physical accompaniments of an emotional state, but great difficulty was experienced in removing the patient's belief that he had heart disease, which was sometimes held with almost delusional intensity.

Another great difficulty was that patients did not come here seeking treatment: speaking generally, their main conflict was over Army service, which for one reason or another they disliked intensely. From contact with such men I came to the conclusion that their low morale was more satisfactorily combated by talking to them in groups than by individual interviews. One had the feeling—and this was endorsed by the nurses' observations—that in individual interviews the men fought shy of such a topic, but at night, after "lights out," would discuss freely their dislike of the Army, their grievances, and their desire for discharge, the last being amply justified because in their opinion they had heart disease, and so on. During such discussions a patient had ample opportunity for dramatizing his predicament, and there was no possible way for the other patients to verify his statements.

After two years of individual psychotherapy conducted under rather difficult conditions, as outlined above, influenced also by the need for doctors to deal with many more patients than is at present the case, it was decided to try a form of group therapy. The patients had been carefully selected and had approximately identical symptomatology: this made the problem much simpler than would usually be the case in a psychiatric ward. The treatment was tried on a group of 50 patients, the remaining 50 being given individual psychotherapy by other doctors. There were two main problems to be considered: the patient's attitude towards his symptoms, and the degree of group responsibility which he showed. These two aspects are best discussed separately.

Patients' Attitude towards Symptoms

As already stated, most of the men on arrival here had marked vegetative imbalance, which they interpreted as positive evidence of disease. A simple explanation of psychosomatic relationships did not appear to be sufficient to undermine this belief, and much more detailed instruction was indicated. The procedure adopted was to have three meetings a week at 9 a.m. on alternate days. The patients and doctor were seated comfortably, the whole atmosphere being completely informal. The junior nurses working on the wards sat at one end of the room. The talk lasted on an average 20 to 30 minutes, with a quarter of an hour at the end for open discussion. At first the talks covered a wide range of topics, including heredity, child psychiatry, the unconscious, propaganda, inferiority feelings, fatigue, relaxation, etc.; but it soon became clear that some definite system, whereby the education was more unified, was necessary. For this purpose I have found that the central nervous system is a suitable subject because it lends itself most easily to diagrammatic representation; thus, talks about the autonomic nervous system or different levels of consciousness as pure abstractions are quite beyond the average patient's comprehension, whereas the same subject taught with the use of charts or a model brain is capable of holding his attention and means something to him. For instance, the brain is explained to the group as functioning at three levels—the cortical, the thalamic, and the brain stem—which, functionally, represent consciousness and the peripheral nervous system, undifferentiated emotions, and control of visceral activity respectively. The peripheral nervous system and autonomic nervous system are then discussed in detail without, however, using medical terms or going into details of anatomy. The main point is that the men should have a rough idea of the function of the nervous system and its importance in adjusting the individual to his environment (the exteroceptive system of Cannon). The autonomic nervous system is dealt with in a similar way, its function in maintaining internal equilibrium being stressed. When the men appear to have grasped these two distinct concepts they are taught how activity or inhibition at any one level may affect

the other levels—e.g., the toxic effects produced by alcohol in removing the inhibitory influence of the cortex, resulting in uncontrolled emotional behaviour; or the effects of consciously apprehended emotional experience upon the vegetative nervous system.

The justification for teaching such an over-simplified abnormal physiology rests in the need for giving the patient some more or less concrete conception of the meaning of "nerves." By actually pointing to nervous structures, represented diagrammatically or by a model brain, the men find that such an abstraction as nerves becomes a reality for them in just the same way as heart disease represents a reality. Moreover, they are always ready to listen to any intelligible discourse about their health, and by frequent reference to everyday evidences of vegetative instability this impression that nerves are a reality is readily strengthened. The whole atmosphere is that of a lecture to intelligent men on a subject of general interest to them. This academic atmosphere is heightened by the presence of the nurses in that they are credited with a certain educational level and prestige. The knowledge gained increases the patient's self-esteem and offsets the embarrassment which so often accompanies an insight into his neurosis: thus the man whose wife has always shown considerable concern regarding his supposed heart condition is able to relinquish this particular ailment provided he can give her some alternative explanation which does not involve the loss of too much self-esteem.

Merely transferring the emphasis from "heart" to "nerves" would be no great advance if it were not for the fact that nervousness cannot be divorced from the total personality. It is easy for anyone to understand that his feelings of fear and so on are part of himself—i.e., feelings and self are much the same thing. In this way the individual realizes that he has a certain responsibility in relation to his feelings and cannot sit back and expect the doctor to do everything, in the same way as he might do if he had heart trouble. The man's own initiative and resources are therefore called into play to find some solution for his problem. At this stage he may ask what action he can take if, having arrived at the point where he is prepared to do his utmost to meet the difficulty, no solution presents itself. Such a situation calls for the highest level of adaptive behaviour, the patient accepting that, temporarily at least, no solution can be found and that only a positive effort at adaptation will prevent a breakdown. The negative personality factors are stressed here—the resentments, prejudices, etc., which if present prevent any possibility of successful adaptation and are fertile soil for the growth of anxiety.

Group Responsibility

The majority of patients seen here have a very circumscribed outlook and are largely preoccupied with their own symptoms, emotional difficulties, and domestic situation; few have reflected on the reason for their conscription or have stopped to consider what they are fighting for. They seldom read newspapers and have only the vaguest conception of the extent and complexity of the war. To them there exist their home and a vague, ill-defined, unfriendly outside world. With no better sense of values than these it is not surprising that some men quite openly and shamelessly hope for nothing but their discharge from the Army.

Two methods might be employed to alter this state of mind: (1) an educational programme, the aim of which is to give the individual a balanced view of the whole world situation and an ability to appraise for himself the merits and demerits of the various systems of government, and to realize that for democracy to succeed a feeling of responsibility from each individual is demanded; (2) an exposition of conditions and restrictions which exist in some other countries and particularly in the occupied countries, with emphasis on the tragic fate of some subjugated peoples. So far only the former method has been employed here, and it is in this sphere that the nurses have been particularly useful. Their main object is to imbue the men with a feeling of group responsibility and make them realize that far more is at stake than simply their own future. A man who has openly made up his mind to get out of the Army if at all possible has not only his own conscience to consider but also the effect of his attitude on

his contacts in hospital, the men at his unit, and, if he is discharged, his contacts at home. His usual plea is that he would be serving his country much better in his civilian capacity at a job for which he was properly trained rather than one where he is a misfit. Such a man has seldom stopped to reflect that practically no one in the Army regards soldiering as his natural vocation and that in a sense the great majority of soldiers are doing work less efficiently than that for which they were, from choice and aptitude, trained in peacetime. The nurse attempts to make him become conscious of the fact that his attitude of mind not only concerns himself but may have a marked influence for good or bad upon his contacts. Her approach must necessarily be an indirect one and occur quite naturally in a social situation. The patients are usually only too ready to discuss their family problems and show the nurses letters from their wives, which all too often are most unsuitable for a neurotic patient to receive, with over-anxious inquiries about their heart trouble and expressing the hope that they will soon be discharged from the Army, etc. The doctor and nurse have to try and offset this damaging home influence and substitute a more realistic outlook. In general the men lack real beliefs, although most of them are convinced that their only salvation lies in a return to a circumscribed existence where they hope to escape from the awareness of world problems which they cannot understand and for which they feel no personal responsibility. The nurse first tries to improve the man's self-regard by getting him to talk about his past work and successes and, having established rapport, tries to arouse his interest in some activity within the Army. General reading is encouraged, particularly periodicals, because the more serious articles give a much greater amount of information than the daily papers.

These measures may appear to be so simple and obvious as to lack therapeutic value, but it must be borne in mind that we are not concerned with the doctor's analytic approach to the problem of morale but with the simple methods which nurses can apply. It would appear undesirable that the physician should himself be too closely identified with this problem, for by so doing he might endanger his privileged position as a doctor.

Summary and Conclusions

During the last few months group therapy has been given to a group of 50 patients with effort syndrome. No follow-up figures are yet available, so that any discussion of results is premature. There is no doubt, however, that simple talks on health problems bearing on their illnesses prove of great interest and value to the men. The danger of fostering hypochondriasis is fully realized, but a hypochondriacal attitude towards their symptoms was already present in these patients on admission to hospital and the various vegetative symptoms had been interpreted as evidence of disease, particularly heart disease. It was found comparatively easy to alter the conception of heart disease to one of "nerves." In order to do so, however, it was essential to avoid, so far as was possible, abstractions such as talks on emotions, the unconscious, belief, etc., and to build up instead an apparently real structure round the conceptions of the central nervous system, which was best done by the use of a model brain, charts showing the nervous system, etc. This led on to discussions on emotions and bodily changes, always relating events to actual change in the nervous system. The next step was to correlate vegetative symptoms, feelings, and self, which, if accepted, meant the adoption by the patient of a personal responsibility in relation to his illness. Finally, emotional difficulties and personality problems were discussed as being the level at which disequilibrium in the nervous system could best be tackled.

It has been found in practice that the men adopt these new ideas with surprising readiness, and that among themselves and in conversation with the nursing staff there is much less tendency to discuss their symptoms than previously. Further, the preoccupation with heart disease has almost disappeared from the wards, and the number of men returning for Army duty is higher than at any time since the unit started two and a half years ago.

Complementary to the group treatment is the employment of the nursing staff to give individual attention to patients, and

particularly to support the doctors' views regarding the patients' symptoms and to develop a sense of group responsibility. This must be largely an individual matter depending upon the ability and beliefs of the particular nurse, but an attempt has been made to indicate in a general way how the nurses have been encouraged to tackle these problems.

Impressionistically, the results have so far been better than with any previous method. There is no doubt that the atmosphere in the wards has improved enormously and the patients are far less preoccupied with their symptoms.

I would like to thank Dr. W. S. Maclay for permission to publish these results and for every possible encouragement.

THE SEDIMENTATION RATE AND THE SEDIMENTIN INDEX*

BY

B. L. DELLA VIDA, M.D. Rome

Assistant Pathologist, the Royal Hospital, Wolverhampton

Since Fahraeus (1921) and Westergren (1920) investigated the phenomenon of the sedimentation of the red cells (E.S.R.) and first gave details of a technique for measuring its rate an extensive literature has accumulated on the subject. Much has been learned of the factors involved in the phenomenon, though its ultimate cause remains obscure, and of its implications in clinical medicine. Some half-dozen different techniques have been recommended for its investigation; this is unfortunate, since it is now abundantly clear that to be comparable results must be obtained under identical conditions. The estimation of the E.S.R. already occupies an important place in clinical pathology, but there is still not even general agreement as to the best means of its expression. Thus the Westergren E.S.R. estimation refers to mm. fall in one hour, the

FIG. 1

Linzenmeier (1920) method reports the number of minutes taken for the red-cell column to reach a certain mark, and the Rourke and Ernstene (1930) technique records results as mm. fall per minute. The applications and implications of the E.S.R. in clinical medicine are far from being

fully understood; the adoption of a common technique and mode of expression of results, such as to make the figures obtained by different workers comparable, would do much towards bringing about a fuller understanding.

Excellent reviews are available by Ham and Curtis (1938) and others on the technical aspects and by Reichel *et al.* (1936) and others on the clinical applications of the E.S.R. In the present communication it is proposed to deal only with certain

FIG. 2.—Sedimentation curves of samples of the same blood specimen by method of (1) Westergren, (2) Cutler, (3) Linzenmeier, (4) Rourke-Ernstene or Wintrobe-Landsberg. Erythrocyte cell volume 42.8%. [Graph drawn from Ham and Curtis's *Medicine* (1938).]

facts, already well known, but of which the importance in the estimation and expression of the E.S.R. has not perhaps been fully recognized.

The rate of the sedimentation of the red cells depends primarily on their clumping. The nature of the agent responsible for this clumping is obscure, but it is accepted that it is a factor resident in the plasma; this, following Day (1940), may be spoken of as "sedimentin." The purpose of the estimation of the E.S.R. is to find an expression of the activity of this factor. The phenomenon of sedimentation is governed by certain physical laws. As shown in Fig. 1 it follows three phases. First, from the zero point at the top of the column the red cells begin to aggregate and to move towards the bottom of the tube, increasing their speed until at point A the second stage, the "period of constant fall," is reached. In the third phase, at point B, "packing" intervenes and the rate of fall is slowed down until it is reduced to *nil* and the sedimentation is complete.

If the various techniques commonly in use for the estimation of the E.S.R. be employed on the same specimen of blood and at the same time, it will be seen, as shown in Fig. 2, that not only the falls as mm. in one hour but also the maximal velocities of sedimentation are different.

Factors Influencing the Sedimentation Rate

Size and Position of Tubes.—Once the period of constant fall had been reached the speed of settling of the corpuscles would remain unchanged if "packing" did not intervene. Therefore from a theoretical point of view the height of the column of blood should be infinite. This is not feasible, but to ensure reliable readings the blood column should be as high as possible. A height of 100 mm. is sufficient, but the 200 mm. of the original Westergren apparatus is preferable. The diameter of the column should be more than 2.5 mm., to avoid the capillary action of the tube (Walton, 1933). The tube must be perfectly vertical, as very slight inclination profoundly affects the rate of fall (Ponder, 1925).

Red Cell Volume.—The sedimentation phenomenon is due to the influence of plasma "sedimentin" on the red cells: therefore, in the presence of anaemia there will be a relative increase of "sedimentin" to each red cell present: Fig. 3 shows the effect of varying the concentration of the red cells in the same plasma. It shows that the more anaemic is the blood the higher is the sedimentation rate, and this not only if expressed as fall in one hour but also as fall per minute during the period of constant fall (Rourke and Ernstene, 1930; Schuster, 1938).

* Paper read before the summer meeting of the Association of Clinical Pathologists, June 27, 1942.