

Summary and Conclusions

The anti-Rh-containing serum of the mother of a baby which died of erythroblastic anaemia caused, when used undiluted, the agglutination of red blood cells of strongly positive reactors to anti-Rh, but failed, undiluted, to agglutinate more weakly reacting cells. When these weakly reacting cells were added to serial dilutions of the serum well-marked agglutination occurred if the serum was suitably diluted. These findings suggest the advisability of using a titration method before deciding that anti-Rh is not present in a serum, and in direct tests between the serum of a recipient and the red cells of potential blood-transfusion donors.

We are grateful to Dr. T. H. Boon, regional transfusion officer, Newcastle-upon-Tyne, and to Dr. S. G. M. Mackay of the Newcastle General Hospital for the trouble they have taken in getting B's serum and details of her case.

REFERENCES

- Boorman, K. F., Dodd, B. E., and Mollison, P. L. (1942). *British Medical Journal*, **2**, 535.
 Dean, H. R., and Webb, R. A. (1926). *J. Path. Bact.*, **29**, 473.
 Duncan, J. T. (1932). *Brit. J. exp. Path.*, **13**, 498.
 Goldsworthy, N. E. (1928). *J. Path. Bact.*, **31**, 435.
 Landsteiner, K., and Wiener, A. S. (1941). *J. exp. Med.*, **74**, 309.
 ——— and Mat on, G. A. (1942). *Ibid.*, **76**, 73.
 Levine, P., and Katzin, E. M. (1940). *Proc. Soc. exp. Biol.*, N.Y., **45**, 343.
 Mollison, P. L., and Taylor, G. L. (1942). *British Medical Journal*, **1**, 561.
 Paterson, J. L. H., Race, R. R., and Taylor, G. L. (1942). *Ibid.*, **2**, 37.
 Wiener, A. S. (1942). *Amer. J. clin. Path.*, **12**, 302.

PHYSICAL TREATMENT OF ACUTE WAR NEUROSES

SOME CLINICAL OBSERVATIONS

BY

WILLIAM SARGANT, M.B., M.R.C.P., D.P.M.

Deputy Clinical Director of an E.M.S. Neurological Unit

During this war there have been few reports on the actual value of the various physical treatments of acute war neuroses. The methods adopted have had not only to be tested in the last three years but also modified from those employed in peacetime. As things have turned out, they have proved a very valuable part of any comprehensive clinical scheme of treatment and rehabilitation for such patients. The scope of psychotherapy and environmental adjustment for acutely ill patients is somewhat limited: there is little time to-day for intensive psychotherapy, and with the country now organized for total war and subject to random bombing it is not always possible to find an environment where the individual is not exposed to stress and can also be usefully employed in the war effort. The aim of physical treatment is to bolster up the constitution so that unavoidable stresses are better tolerated by the individual. Should active fighting on a second front develop or a renewal of severe air raids occur, the sphere of usefulness of such treatments will be greatly enhanced, and a knowledge of their possibilities is consequently of importance to everybody.

In this unit we have had unparalleled opportunities of testing and developing such methods. After the Flanders retreat we admitted convoys direct from the Dunkirk beaches. Subsequently, months or weeks later, during which time their condition had often gravely deteriorated, acute cases were admitted from other sources. During the Battle of Britain we received casualties from coastal areas and bombed aerodromes, and during the long winter aerial bombardment of London we had to deal with patients suffering from acute neuroses who had broken down after weeks or months of useful service as members of the Civil Defence Services. On several occasions bombs were dropped either on the hospital or in the grounds, and at these times and throughout the raids we obtained very valuable experience at first hand on how to use these methods

with a unit of neurotic patients presenting a wide variety of panic reactions.

Since over 3,000 Service cases alone, both acute and chronic, have had to pass through our limited bed accommodation, there has been a pressing need to seek means of accelerating processes of normal recovery, of preventing aggravation of existing symptoms, and of getting patients well enough to return either to readjusted duties in the Services or to some useful civilian occupation. Our aim has been to avoid, if possible, a recovery that is long-drawn-out.

Our most important finding has been the supreme need for immediate first-aid treatment of the acute neurosis occurring in a good previous personality. This is best done by physical methods. Application of treatment should be considered in terms of hours rather than of days or weeks. In this way conditioned fears can be to a certain extent prevented from becoming ingrained in the personality, and neurotic behaviour patterns that were primarily released under severe stress from recurring whenever the individual is again exposed to the slightest danger. We have also learnt that the response to treatment depends not only on the speed with which treatment is given but also on innate qualities of personality. No treatment will endow a patient with qualities of stamina that he never previously possessed. A fundamental constitutional stability under ordinary stresses has been found of overwhelming importance to a good prognosis. Previous general instability offers a very poor one.

First-aid Treatment

For the acute panic state the advantages of heavy sedation given at the earliest possible moment have been amply demonstrated. As a rule too little rather than too much is given. At the first sign of impending breakdown in a good previous personality very heavy sedation, immediately applied to produce unconsciousness for some hours, may stop the development of a neurosis requiring treatment in hospital. The individual's natural stamina is thereby allowed some hours to re-establish itself at a time when his will-power and morale are showing signs of initial failure to cope any longer with the stresses encountered, and he is temporarily open to the acquirement of a wide variety of conditioned fears.

In an emergency alcohol can be used as a means of rapid first-aid sedation, but other chemical methods are preferable. Two to four drachms of paraldehyde, for instance, are very useful, because the drug acts so fast. Six to nine grains of sodium amylal may also be given, or 10 to 20 grains of medinal. But these drugs have the disadvantage of not taking effect for from one-quarter to half an hour. During even this short period the seeds of a future conditioned phobia may be implanted. In the hyperacute condition, especially when the patient is disturbing those around him and destroying their morale, the best method of treatment is the production of immediate unconsciousness by intravenous barbiturates. Whether such first-aid measures will have to be followed by further treatment depends to a certain extent on the physical state of the patient. If he has already lost 1 to 3 st. before he starts breaking down, he probably needs further treatment and rehabilitation, and should be sent back to hospital after these initial first-aid measures. Psychological improvement is rarely permanent if the patient's physique has much deteriorated. However, if the stress has been short-lived though very severe, and if the personality is sound, then deep sleep for some hours may be quite sufficient to enable the patient to carry on his work, especially if initial heavy sedation is supplemented for a day or two by milder sedation.

Breakdown can also be prevented by the judicious use of prophylactic sedation. Courage and will-power have physical components and are certainly not directly dependent on the psyche. Both these attributes of the mind readily weaken if the person is fatigued. Loss of weight, loss of sleep, or even a poor quality of sleep may bring latent weaknesses in the power of resistance to the surface in neurotically predisposed individuals. During a period of temporary crisis the individual's final breakdown can often be averted by the judicious use of sedatives given deliberately to extend to the maximum his limited reserves of nervous energy. Battles are won by hanging on even a few hours longer than the enemy. It was interesting to find soldiers who had been able to go through the stress

of Dunkirk fortified by brandy obtained during the retreat but who made a hopeless showing when faced with a minimal stress in England. If such prophylactic sedation is used occasionally in a crisis, addiction need not be feared in any except severely psychopathic cases. Methods of treatment that are useful for the many should not be rejected because of the weakness of a few. As well as the need for sedatives, there is often an alternative one for temporary stimulants to tide over a few hours of fatigue and stress. Here benzedrine may be found exceedingly useful, and again, in normal persons, there need be no fear of addiction. There has been no real evidence of addiction in non-psychopathic types, despite the current popular phobia; even the neurotic individual does not crave for prolonged sleeplessness, which this drug produces.

Numerous publications during the war have emphasized the value of intravenous injections of barbiturates as an aid to restoring the memory of events for which there has been a hysterical amnesia or to investigating a patient's illness from a psychopathological angle. In addition, however, these drugs are extremely useful as a means of dealing with other acute hysterical conversion symptoms, such as the sudden loss of use of an arm or a leg, immediately they occur. The drug is injected, anxiety is rapidly relieved, being replaced by a sense of well-being, and the patient is susceptible to suggestion and the restoration of function in the part affected. This treatment should preferably be given by the medical officer at the casualty clearing station as soon as the symptoms occur. If they are taken early there may be no need for the patient's transfer to a neurosis centre, unless other symptoms need attention. If acute hysterical conversion symptoms are left untreated for more than a few hours the abnormal behaviour pattern becomes more ingrained and obvious escape mechanisms grow more fixed by the patient's removal to a safe area.

Continuous Sleep Treatment

If severe anxiety or hysterical symptoms have continued for even a week or longer, other treatment is necessary which cannot be done except in hospital, though not necessarily very far from the scene of fighting or bombing. By this time physical changes will have become more pronounced and conditioned fears will have taken a firmer hold. A much longer period of sleep treatment is necessary to destroy these. Any sedative drug can be used. Paraldehyde can be given, orally or rectally, in doses of 2 to 4 drachms every four hours; alternatives are 3 to 6 gr. of sodium amytal at four-hourly intervals, hyoscine and luminal as advocated by Mira, or mixtures of these drugs combined, if necessary, with 2 c.cm. of somnifaine twice a day. The aims of treatment are to avoid undue toxicity, to procure 20 hours of sleep out of the 24; to adjust the dose so that sleep is neither too light nor too deep and patients are roused to take their meals, and to see that during the 7 to 10 days the treatment is being continued the patient receives 3 to 4 full meals a day and is given enough fluid to restore his physique and avoid the dangerous toxic effects of the drugs. At the end of the treatment sedation is slowly reduced. Other measures, which were useless while the acute anxiety and physical deterioration dominated the picture, may then be effective. It is wise to clear up outstanding hysterical conversion symptoms, if they are present, by intravenous injections of barbiturates and suggestion before the treatment is started.

Modified Insulin Treatment

Another interesting group of patients admitted to a neurosis centre comprises the good previous personalities who break down only gradually over a long period of stress and have kept on fighting against their increasing symptoms. After weeks or months of intense strain they may find that they are starting to have anxiety and hysterical responses to stimuli that previously left them almost unmoved. By this time they will probably have lost from 1 to 3 st. in weight and they show a peculiar mixture of anxiety, hysterical, and reactive depressive symptoms in proportions depending on their constitutional make-up. They can be superficially responsive to encouragement and psychotherapy: psychotherapy may, in fact, seem the treatment of choice because the patients are reasonably co-operative, but they quickly relapse under any

fresh strain, despite a superficial improvement. If, for instance, they are rapidly cured in this state of a conversion symptom and returned to duty, they are shortly readmitted, more discouraged than before. They are often dubbed malingers because of the insidious onset of the condition, but the doctor's suspicions as to the true nature of the illness should be roused by the fact that their past record is good. They generally retain insight into their deterioration and are ashamed of it. They cannot control their increasing somatic responses to fear stimuli, however hard they try. This type of patient was most often seen among good A.F.S. personnel who had done excellent work during three months or so of the London air raids before breaking down, and among those who tried to carry on for some considerable time after return from Dunkirk despite an increasing nervous disability. They resemble descriptions of the good type of patient who broke down on the western front in the last war after months of hard fighting and good morale. They should be distinguished from the individuals suffering from hyperacute anxiety state or the purer forms of endogenous depression, so far as physical treatment is concerned. They are best treated by a modified form of insulin therapy, which should be carried out in a base hospital, free from conditions of acute stress. The technical details of this treatment have been described elsewhere (Sargent and Craske, *Lancet*, 1941, 2, 212). It has been found most useful for fairly rapid restoration of physique and of some degree of working capacity, though the patients are rarely able to return to the full stresses that precipitated their illness. Of the 300 or more patients that we have treated by modified insulin therapy in this unit, these patients and those suffering from mild reactive depression have done best. Often they will gain a stone or more in a few weeks, and the vicious circle of anxiety and loss of weight and increasing incapacity is broken. The fact that they are being given a definite treatment is not without its psychological effect. On recovery these patients should be sent to modified duties or a somewhat less exacting environment, as they remain conditioned to their past experiences and have a horror of being reduced to a similar state again. In some patients the illness has been started initially by a head injury or by blast effects.

Convulsion Therapy

Among the other good personalities that may break down, especially after three years of war, there are many patients who get sent either to neurosis centres or to mental hospitals. Included among them are the over-conscientious non-commissioned officer with many years' service and the valued industrial worker who are particularly prone to break down into a depressive state because of their previous conscientious obsessional personality. Such patients carry on till they are sleepless, retarded, have ideas of guilt, or blame themselves for failing in their excessively high standard of duty or for letting down their comrades or superiors. These patients do not respond well to modified insulin therapy; despite a large intake of food they do not put on weight. Metabolic changes have occurred which are difficult to reverse and are reflected not only in a depressed attitude of mind but also in a general slowness of bodily movement, easy fatigability, and retardation of thought, speech, and even facial expression. Sometimes this distressing condition can be broken up by a long course of continuous sleep treatment lasting up to three weeks, but this will occur in only a relatively small proportion of the patients treated. One may have to wait months, a year, or even longer for spontaneous recovery to occur, even if the patients are immediately discharged from the Army or removed from stress. They are inaccessible to psychotherapy or reassurance. Convulsion therapy, however, should produce a rapid improvement in up to 75% of those patients with a good previous personality and genuine severe depression. Such treatment carries with it a slight risk of fractures, but has not the far from negligible mortality of a long course of continuous narcosis in inexperienced hands. Fractures can now generally be avoided with clinical skill and correct positioning of the limbs and body. If fractures should occur they will rarely cause a period of disability longer than that of the untreated illness. Therefore, if the illness appears likely to be long, this treatment should be considered. The advantages should be weighed against the risks.

Conclusion

It will be seen, therefore, that methods of physical treatment are now available as an aid to shortening the period of total disability in many acute psychiatric conditions. In good previous personalities acute panic states, acute anxiety states, anxiety hysteria, and states of depression now all have their appropriate treatments along such lines. These treatments must, of course, be used in conjunction with other established methods, both psychotherapeutic and environmental, to bring about recovery, restore the individual's self-respect, and diminish liability to further breakdown. Clinical experience greatly enhances their possibilities, just as poor judgment in the selection of cases may rob them of all effectiveness.

NIGHT VISION IN THE ARMY

BY

B. W. RYCROFT, M.D., F.R.C.S., Major, R.A.M.C.

Command Specialist in Ophthalmology

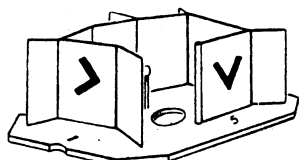
Much has been written on the subject of night vision, which in peacetime has interests of academic value; in wartime, however, the interest must be essentially practical and a contribution to the efficiency of the fighting Services. It follows, therefore, that any investigation of night vision among troops must endeavour to obtain information which will be of value to unit commanders in their conduct of operations.

Briefly such information will consist of: (1) The general state of night vision in the unit as a whole and also in comparison with other similar units. (2) The names of personnel whose night vision is above average and who are especially fitted for night patrols, night leadership, night "spotters," etc. (3) Picked drivers whose night vision is above average and who may safely be trusted to lead a column of vehicles at night in total darkness without lights. (4) Drivers who are night-vision-defective and dangerous in their present military occupations. (5) Contact with the unit as a whole enables an opinion on the general ophthalmic state to be given—e.g., what percentage should be sent for routine examination.

To obtain this information the military specialist in ophthalmology requires portable test apparatus, simple to work and robust in construction, which can be employed throughout the Army to give uniform and standard results. The co-operation of the unit commander is also essential, and, in our experience, is always willingly given in spite of disturbance to training programmes caused by our visits. Thanks to the initiative of the Consulting Ophthalmic Surgeon to the Army, Brigadier Sir Stewart Duke-Elder, the Army now possesses such apparatus, and our experience in 10,000 cases has proved that it fulfils the required criteria stated above.

The Army Night-vision Test

So far as is possible, in any night-vision test, the object is to stimulate the parafoveal and peripheral areas of the fundus. The test object, therefore, in the Army test is a large V mounted in five different positions on a translucent screen behind which is a small bulb run from a dry battery and controlled by



The apparatus. (Drawing supplied by Theodore Hamblin, Ltd.)

a rheostat and voltmeter. The lamp is at varying distances from each of the five screens, which are arranged as an irregular pentagon. The whole apparatus can be rotated so as to bring one screen at a time in front of the patient.

Before examination the soldier is asked the following questions: (1) What is your age? (2) Have you any eye trouble

and do you wear glasses? (3) How is your sight in the dark? (4) Do you live in the town or in the country? (5) What is your job in civilian life? (6) What is your job in the Army?

The subject sits at one metre from the apparatus and is rendered fully dark-adapted by wearing dark goggles for 30 minutes; at the end of this period these are cleared of moisture—a most essential procedure—and he then writes down the position of the five V's in turn; his night vision is accordingly assessed. If he sees all five V's his night vision is excellent; if he misses all five it is very bad. Thus, night vision 5/5 is excellent; 4/5, 3/5, 2/5, and 1/5 are average; 0/5 is poor.

All that is required for mass examination at the unit location is a dark Nissen hut divided in two by a curtain. On one side the test is conducted; on the other the men wait in their goggles, and clerical work is carried on with shaded lights.

Full dark adaptation is important: after examination the night vision is recorded in the soldier's personal documents, and a record of the entire unit is made, incorporating the previous questions. It is possible to examine 200 men daily with this test, tabulating results as follows:

TABLE I

No.	Rank	Name	Age	Civil Occupation	Army Occupation	Man's own Remarks	Score	T/C	G.
1234	Cpl.	?	29	Clerk	Driver	Fair	3/5	T	—

T/C = Town or country; G. whether or not the man wears glasses.

Analysis

When the unit has been examined the results are carefully analysed, and classification into three main groups is made thus:

- (A) Men whose night vision is above average—i.e., 5/5
- (B) " " " " " average—i.e., 4/5, 3/5, 2/5, 1/5
- (C) " " " " " below average—i.e., 0/5

The night-vision defectives are further analysed to indicate to the unit commander why these men have failed in the test; they are grouped according to four factors which have influenced their result—namely:

1. *Age*.—Experience has shown that most men over 30 years of age are both slow in the rate of dark adaptation and defective in night vision. This is a general statement for practical purposes and does not hold good in every case: it is adversely affected if the soldier has an error of refraction, and it is improved if he is well educated. After 30 years of age deterioration in night vision becomes marked with the passage of every year.

2. *Defective day vision* influences night vision by errors of refraction especially in myopia, corneal nebulae, familial defects, and other ocular diseases. For convenience and simplicity, all cases whose night-vision defect is thought to be due to any of these factors are placed in this group.

3. *Intelligence* plays a part: it is noticed that officers, headquarters companies, and the more intelligent types of men do well, whereas the man of the labourer class often fails because he does not grasp the significance of the test. The result, however, is not vitiated, as this is not the type of man one would choose for night operations demanding initiative. Careful investigation has shown that environment plays little part: it does not seem to matter whether a man is town-born or country-born, but the opinion was formed that miners were rather better than most of their class.

4. "*No explanation*" has sometimes to be noted when a man persistently fails and when none of the previous factors are in evidence. It may be due to steamy goggles or malingering.

When the unit report is complete it is sent to the commanding officer, and a star is placed against the names of men who are dangerous in their present military occupation—e.g., carrier drivers. An example of such a report is as follows:

Subject: Analysis of Night-vision Tests

To: Officer Commanding,
The Blankshire Regt.

I have the honour to forward the analysis of night-vision tests of your command, carried out on

Number tested .. 656 (622)

Number with excellent night vision—above average.. 373 (298)

Number with poor night vision—below average .. 70 (80)

(Figures in parenthesis are those of another unit for comparison)