All the reports dealing with the existence of such a factor, except those of Torrioli and Puddu (1934) on its effect on the megakaryocyte in marrow culture, are based on the results of intravenous injection. Many non-specific agents—for example, heterologous red cells or serum, peptone, and suspensions of micro-organisms or inert particles—are capable of causing a considerable reduction in platelets when given intravenously (Tocantins, 1938), and there is no reason why these comparatively crude extracts of the spleen should be put in a special category. It is also worth noting that a splenic extract has been reported as causing a thrombocytosis when given subcutaneously (Haenlein and Schliephake, 1935) and that an anti-spleen serum produces thrombopenia (Bedson and Johnston, 1925). The evidence for the existence of a specific thrombopenic principle in splenic extracts is therefore unconvincing.

Summary

A series of extracts from normal spleens and from three cases of thrombopenic purpura have been prepared, and were injected into rats and rabbits. No evidence of the existence of a specific thrombopenic factor was found, and it is suggested that the positive results of a few other workers may have been due to non-specific reactions to intravenous injections.

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EVALUATION OF HYSTERICAL SYMPTOMS IN SERVICE PATIENTS

BY

W. P. MALLINSON, B.M., M.R.C.P.

*Temporary Surgeon Lieutenant-Commander, R.N.V.R.,
 Neuro-psychiatric Specialist; late Assistant Medical
 Officer at the Maudsley Hospital*

Since the outbreak of war the Navy has been working under conditions of continuously severe stress, and the personnel has been increased by the introduction of many conscripted recruits. Mainly among these men, and among reservists recalled from their civilian jobs and from home life to the rigorous conditions of the Service in wartime, a certain number of hysterical reactions have inevitably occurred. It has already been shown, both in the last war (Beaton, 1920) and in this (Curran and Mallinson, 1941), that the incidence of hysteria as a primary diagnosis is not high in naval psychiatry.

The committee on head injuries of the Medical Research Council (private information, unpublished) has defined hysteria as "a condition in which mental and physical symptoms not of organic origin are produced and maintained by motives never fully conscious, directed at some real or fancied gain to be derived from these symptoms." In addition to a definition it is necessary, for clinical purposes, to have criteria which will help to reduce the very varied manifestations of hysteria to an ordered symptomatology, to minimize subjective and impressionistic judgments, and to cut short philosophical speculation about fully and incompletely conscious motives. The Services make demands on their medical officers

which call for special criteria of prognosis and recovery. The disappearance of symptoms is not enough; a reasonable assurance of future reliability and freedom from relapse under war stress is required. If this assurance cannot be given, discharge from the Service is called for, even though recovery may be adequate from the point of view of civilian life. It must also be remembered that a successful hysterical "escape," if the motive is even dimly present in consciousness, will permanently reduce the social efficiency of the individual by facilitating a recurrence in the face of subsequent difficulties, and within the Service it will impair morale by inviting imitation by others.

The long and unbroken period of active service which the Navy has undergone is offered as the reason for giving a short account of a classification, derived from clinical and aetiological considerations, which has been found of practical value in the treatment and disposal of patients showing a hysterical reaction. On discharge from hospital a patient may (i) return to full duty, (ii) return to modified duty in accordance with psychiatric advice, or (iii) be invalided from the Service. The reactions are classified as follows: (1) simple hysterical dissociation; (2) hysterical prolongation; (3) hysterical exaggeration; (4) hysterical simulation; (5) hysterical "complications" of an underlying disorder.

1. Simple Hysterical Dissociation

This group, in which the symptoms arise without any conscious motive and without other signs of psychiatric disorder, includes both (a) those cases in which there is little or no lapse of time or period of meditation after the precipitating physical or mental trauma, and (b) those which follow a long period of stress or conflict.

(a) As an example of the former one may cite the instantaneous paralysis of a limb which sometimes accompanies a relatively slight flesh wound. In such cases, if the hysterical dissociation is uncomplicated by any other disorder and psychiatric treatment is given early, the prognosis for return to duty should be good. Acute cases of this type, however, are rarely seen in our unit, which is analogous to a military base hospital. Where the removal of the hysterical symptoms releases much anxiety the prognosis depends upon the intensity of the objective signs of anxiety (see "5. Hysterical Complications").

(b) The following is an example of the latter type of reaction.

Case 1.—A stoker who joined the Navy two years ago was admitted following a hysterical fugue. He had an amnesia for the whole period since he joined the Service, but he showed no anxiety or other psychiatric disorder. In the course of investigation and treatment it materialized that he had joined the Navy primarily because a girl to whom he was attached admired the uniform. Shortly afterwards this girl gave him up and he became attached to another girl of a rather higher social standing. He had for long been pre-occupied with the idea that he would never earn enough money in the Navy to justify his proposing marriage to this girl. This conflict gave rise to hysterical dissociation only after many months. The Service prognosis of such cases must be more guarded because the psychopathical mechanisms which produce the symptoms have often been operative long enough to impair the stability and adaptability of the personality. In other words, the longer a conflict persists before it is "resolved" by a flight into hysterical dissociation the more difficult it will probably be to get the patient to face up to the less pleasant alternative.

2. Hysterical Prolongation

Here the symptoms arise on a basis of previous organic or psychological disorder in association with a greater or less degree of consciousness of motive. Typical instances are the hysterical persistence of headache in patients convalescent from head injury and of tremor following acute

anxiety: the cerebral and emotional disturbances respectively are over, but the patient is reluctant to give up symptoms which are preventing his being ordered to face the same dangers again. In other cases, as those in which hysterical headaches or dyspepsia, for example, supervene upon a recovering affective reaction, the symptoms bring about a continuation of the illness by replacement or substitution rather than by direct prolongation.

Case 2.—A reservist aged 38 was drafted on recall to a destroyer, which was mined three months after his joining her. Following the immersion he developed a suppurative mastoiditis, which was operated upon successfully, with a good preservation of hearing. For several months afterwards, however, he complained of vague paraesthesiae behind the ear and numbness and weakness of the whole of the same side of the body. The continuance of these symptoms was dependent upon his reluctance to return to sea, and as there was considered to be no risk of the development of more serious psychiatric disorder he was given an explanation, was reassured, and was sent back for a preliminary period of shore service.

3. Hysterical Exaggeration

This takes the form of an exaggeration of an organic or psychological disorder which still exists.

Case 3.—A seaman cook aged 25 was drafted on conscription to a trawler; he had previously been a cook in the Merchant Service in large liners. He disliked the small ship and suffered a good deal from sea-sickness. The symptoms of sea-sickness became elaborated into a syndrome highly suggestive of duodenal ulcer, and they persisted when he came into hospital. Investigations for an organic lesion were negative, and it appeared that the elaboration had been possible because his father had for years been under treatment for duodenal ulcer and the symptomatology was table-talk at home. While he was in hospital retention of urine occurred, undoubtedly the product of hysterical simulation. But little anxiety accompanied this reaction, the symptoms subsided with explanation, and he was ordered to return to duty. In order, so far as possible, to prevent a relapse a recommendation was made for drafting to a larger ship.

Cases 2 and 3 show how hysterical prolongation and exaggeration can coexist. The symptoms in such cases are at least partially under conscious control, and to this extent will respond to alterations in incentive, to concessions, discipline, and deprivations. Here, again, if treatment is not too long delayed return to duty is often possible.

4. Hysterical Simulation

The "patient" classified under this category wishes to convince others that he is ill without himself really believing it. In the majority of cases the distinction between hysteria and malingering can be made fairly easily; but there is a borderland where endless discussion is possible over the degree of "conscious escapism" present, or whether a certain patient's loss of memory is "really genuine," or whether another patient can't hear or won't hear or can't hear because he won't. The practical issue, in the Services, is to distinguish as quickly as possible those who will make a satisfactory adjustment to Service demands and discipline after, on the one hand, a reasonable period of treatment or, on the other, disciplinary measures, from those who, even after the appropriate procedure has been carried out, will not make the adjustment. Kretschmer (1917), in a study based on German military psychiatric cases of the last war, deprecated attempts at a sharp aetiological distinction between hysteria and simulation, preferring to regard them as alternative paths open to persons of hysterical disposition. He stressed the importance of estimating separately in each case (1) the significance of the hysterical symptoms in the setting in which they occur—that is, in relation to any underlying disorder, and (2) the "health-conscience" (*Gesundheits-*

wille), or attitude of the patient towards illness, his readiness or unwillingness to succumb to minor ailments and discomforts.

Discipline is specific for malingering, and rapid diagnosis and prompt treatment provide effective prophylaxis. Malingering is rare in the Navy as a whole, and when it does occur ships' doctors are quick to recognize it and thereby prevent needless and harmful stay in hospital. Hence this diagnosis has been almost unknown during the first eighteen months of work in the neuro-psychiatric unit of our naval hospital. In civilian practice opportunities to apply discipline are limited: an explanation to relatives and injunctions to substitute firmness for sympathy, together with instructions to the patient to remain at work, are all that is usually possible. In the Services we are fortunate in having disciplinary measures available, comprising simple return to duty, return to duty with restriction of privileges, or actual punishment. One or other of these possibilities often provides the best treatment for certain cases of hysteria. To apply them in the wrong place or at the wrong time, however, will cause much suffering and may lead to serious mental breakdown. Like many of the most effective remedies of general medicine and surgery, discipline applied without proper discretion may be extremely harmful and, as when it precipitates suicide, actually lethal. The following is an illustrative case.

Case 4. Chronic Pathological Anxiety.—An able seaman aged 25 was admitted complaining of loss of self-confidence and inability to do his work. He joined the Navy in 1934 for seven years' service; three years ago he married, and since then he had been very keen to return to civilian life as soon as possible. During this war, which put an end to his hope of retiring in 1941, he had been engaged in submarine detection with convoys. In July, 1940, he left his ship without leave and made his way to his home town. He could not explain his unexpected arrival, so his brother fetched a doctor, and he was taken to a civilian hospital, where the diagnosis of a hysterical fugue was made. The presence of a very strong incentive was obvious, and the alternative diagnosis of desertion had to be most seriously considered when he was transferred to this hospital. Psychiatric examination, however, revealed a long-standing condition of pathological anxiety that began before he joined the Navy and was aggravated by the strain of duties for which he was barely intelligent enough and was temperamentally unsuited, and by the unresolved conflict between his desire to return to civilian life and his obligation to continue in the Service. The "genuineness" of his fugue was an issue of no practical importance, since on admission to hospital the anxiety and depression resulting from these constitutional weaknesses and topical conflicts had taken such a hold on him that invaliding was necessary, and even this, with its promise of release, caused no real improvement. In this man the escapist motive had been in the forefront of consciousness for a considerable time, but it was not effective until a fairly long struggle between his personal wish and ethical demands had seriously impaired his none too robust mental health.

5. Hysterical "Complications" of an Underlying Disorder

These conditions differ from Categories 2 and 3 in that the underlying disorder does not determine the form of the hysterical symptoms. The latter represent a secondary reaction produced by the operation of increased or prolonged stress upon an already impaired or a congenitally inadequate mental or physical constitution.

Case 5. Mental Backwardness with Hysterical Paralysis.—An able seaman aged 44, recalled after twelve years of civilian life, was admitted complaining of his left leg repeatedly "giving way without warning" during the last few months. No organic disease was found in the nervous system, and the only physical abnormality was an achlorhydric dyspepsia. His recurrent paralyzes were undoubtedly hysterical, but recall

had rescued him and his family from a long period of insecurity due to irregular employment; he had been glad to go back and was not an "escapist." About three years ago, during a period of great domestic difficulty, similar symptoms had developed. He proved to be mentally backward; he had only reached Standard II at school at the age of 14, and his mental age by the Kent emergency test (modified for English use) was 9 years. He had been able to carry out routine duties in peacetime, but the conditions of service in a destroyer in wartime, with the long hours and responsibilities of watch-keeping, brought him up against his intellectual inadequacy. He became anxious and depressed, and his hysterical disability relieved an intolerable situation. He was wholly unaware of the origin of his symptoms. The most that could be expected of him in modern warfare was a simple job ashore.

Case 6. Endogenous Depression with Hysterical Fugue.—

A conscript recruit 25 years of age, this patient in civilian life was a milk roundsman, and on two occasions in the past five years his barrow had been found abandoned in the street and he himself had been brought home by the police after wandering many miles into the country. Each of these incidents had preceded a depressive illness lasting about three months, during which he had been unable to work. There seemed to be no adequate psychogenic cause for these attacks, and both previously and in the intervening period he had been a satisfactory worker. The occasion of his admission to hospital in June, 1940, was his arrest by the military police when wandering without leave in a prohibited area many miles from his depot. A charge of desertion was made, but he was referred for psychiatric investigation. On admission he was depressed and retarded; his depression gradually lifted, and after two months in hospital he was bright and active. His normal personality was not hysterical, and the illness followed a course precisely similar to the description he gave of the two previous attacks. On the evidence the basic condition was considered to be a liability to recurrent attacks of endogenous depression, and, although he had completely recovered, he was invalided on account of the risk of a further breakdown. The wandering which heralded his depressive attacks was associated with amnesia, and it appeared to be a genuine instance of dissociation; on the first and second occasions, at any rate, there was no question of a conscious motive, and on the third it was unlikely that there was one. It is probable that an early stage of depression and retardation shortly preceded each of the dissociative episodes.

In neither of these cases, nor in Case 4, could a resort to discipline have had any result but to aggravate and prolong the illness, with a risk, at least in Cases 4 and 6, of precipitating a suicidal depression. Among the hysterical "complications" of depressive and anxiety reactions fugues have been fairly common. In a number of these cases in which a charge of desertion has been made the question has been answered in favour of the patient as the result of finding other objective signs of psychiatric disorder of a graver kind. To this group also belong most of the cases of pseudo-dementia and the few cases of Ganser syndrome that we have seen in this unit. In some instances a poor school record and an account from mess-mates and superiors of a genuine difficulty in learning and carrying out duties may indicate the presence of mental backwardness. In others one or more of the physical concomitants—loss of weight, fine tremor, raised pulse rate, raised systolic blood pressure, or dilated pupils—together with insomnia or recurrent dreams, may point to pathological anxiety. In others, again, some loss of interest or slowing up of thought and action, reduced self-confidence, irritability, constipation, and loss of appetite may reveal an underlying depression, recognition of which will set the more superficial and more striking hysterical symptoms in correct perspective. Hysterical symptoms have also occasionally been met with engrafted upon cerebral arteriosclerosis, cerebral syphilis, alcoholism, and schizophrenia. Indeed, patients who show a complete absence of hysterical features are rare in wartime psychiatry. The

exceptions are striking. Occasionally men are admitted, having been sent sick against their will when observed to be severely disabled by anxiety or depressive reactions, who in the presence of the most intense objective symptoms and with excellent insight retain an unshaken morale. In many of these men the will to return to duty is weakened by the long period in hospital which their treatment inevitably demands; others are completely resistant to the hysterical utilization of their symptoms, and throughout their illness are ready to fulfil without hesitation any demands that might be made of them.

Of those patients in whom the hysterical manifestations are of secondary importance and who become fit to return to duty, as well as of those showing hysterical prolongation or exaggeration, many need certain concessions—e.g., a recommendation for drafting to a larger ship, a period of shore service, or a change of work—if they are to continue as useful members of the Service. Their value to the Service has to be balanced against the inconvenience and the danger of creating a precedent involved by the concession demanded.

Two further criteria—the family history and home atmosphere and the personality and past record—have been found helpful in assessing the likelihood of a satisfactory adjustment to Service demands.

Family History and Home Atmosphere

First, an inquiry is made into mental or nervous illness suffered by any close blood relation, and any marked personality characteristics. The occurrence of depressive, schizophrenic, or "neurasthenic" illness, for example, in such relations will prompt a search for signs of a more serious underlying disorder in the hysterical patient. Secondly, a picture is obtained of the economic standards and "work-conscience" of the family as a whole, and the patient's attitude and relation to these standards are ascertained. Is there a tradition of steady work and social reliability in the family? Is the patient above or below the average level of his parents and siblings in these respects? Is he temperamentally similar to the other members of his family, or in some way different from them—more dependent, for example? What was his school career in comparison with those of his brothers and sisters?

The facts thus elicited are of value in diagnosis in that they may lead to the assessing of the hysterical symptoms as a complication of some more fundamental instability based on inherited or early environmental factors. They also help in prognosis: the prognostic significance of a depressive psychosis of known duration in a brother or sister or of chronic invalidism in the father following "shell-shock" or "D.A.H." in the last war need not be emphasized, although it calls for careful evaluation. Both the inherited constitution and the patient's reaction to the level of "health conscience" prevailing in his family must be taken into account.

The Personality and Past Record

It is useful to make a distinction between hysterical symptoms arising in a setting of psychopathy and those which, as in the cases so far described, either complicate some other form of psychiatric disorder or are more or less isolated occurrences in a fairly stable personality. Here, as in Category 4, while the presenting symptoms may be produced by simple dissociation, prolongation, exaggeration, or simulation, the main prognostic criterion is the intensity of the underlying disorder—in this case of psychopathy. Of the multitude of traits and characteristics which have been described as part of the hysterical personality two at least have been too commonly met with for mention of them to be omitted in the consideration of

these cases: (a) a defective "health conscience," and (b) a desire to be the centre of attention and to obtain more appreciation from the community than is earned by actual social and personal value. A past history of neurotic traits in childhood and difficulties in adjusting to school life, as well as an unsatisfactory work record with many changes of job and much time off for minor ailments, is commonly found among hysterical psychopaths. A large number of those who broke down had never, on account of ill-health, inefficiency, or distaste, held a job for long in civilian life.

Case 7.—A Newfoundlander enlisted with most of the eligible men in his village in January, 1940. His application was a half-hearted gesture which both he and his mother and, as he said, the whole village were astonished and dismayed to find successful. He had been known for years as a semi-invalid, taking after his father, who had twice been a patient in a mental hospital. He had given up one job after another because it was too strenuous, and his work record consisted of short periods in labouring and farming jobs, long-shore fishing, and fish-packing, interspersed by considerable intervals for rest and recuperation. On arrival in this country his humble position, the disappointing pay, and the lack of interest in his hypochondriacal complaints shown by his messmates and superiors in the training depot provoked an intense resentment against the authorities who passed him as physically fit to join up. After a few weeks he reported at the sick bay complaining of pain in the back, which he alleged had been brought on by rifle drill, and frequency of micturition. Full urinary investigation was carried out, including even an intravenous pyelogram and a radiograph of the spine and renal areas; no physical abnormality whatever was discovered. On admission to the Royal Naval Auxiliary Hospital his mental state can be briefly described as disgruntled petulance. He was completely taken up with his own symptoms and disappointments; he showed no interest in the war news or the other patients, worked mechanically in the occupational department, and went through the movements in the physical-training class in feeble apathy. He made no improvement at all until the decision to invalid and repatriate him was made.

Case 8.—An ordinary seaman aged 25 volunteered after a minor quarrel with his wife in April, 1940. In July he got his first draft, to a small submarine-chaser. For the whole of the two months he was with her she was in harbour fitting out, and only twice went to sea on trials. He was terrified by heavy air raids on the harbour, and one night, returning from leave, he collapsed in the street and was taken to hospital by the police. Shortly afterwards he was given sick leave; he went home, and overstayed his leave because he "could not face it again." He could not explain to his relatives his remaining at home, so he spent three days wandering round the city without food and then reported at the local naval depot. He was sent from there to our hospital. He looked and played the part of a hopeless and beaten man; his voice was rather ungeniously tremulous and tears were "not far away." He said he would rather go to gaol than return to duty and that he had been foolish not to plead conscientious objection. He showed none of the physical signs of anxiety, and slept well without drugs. He made no complaint of illness: "Just funk, I suppose; it's a rotten way to be, but whenever I think of going back my stomach turns over and over." He was of average intelligence and his work record in civil life had been fairly good, although he had always looked for jobs near his home, as he was very dependent upon the sympathy of his family. His personality was immature and egocentric, and his freedom from "symptoms" appeared to spring from a complete absence of struggle against his fears. He showed no sense of social responsibility and spent much of his time in hospital spreading discontent and resentment among the patients. In such a case as this the role of the doctor can only be to report his findings and to advise the executive authorities, with whom the final decision as to disposal must lie.

Case 7 is an example of defective "health conscience"; Case 8, of defective morale. A description of the latter case is given although it cannot be classified as hysterical, because here, as with the typical hysterical psychopath,

failure in the Service was an expression of the inadequacy of the total personality. Both cases illustrate a very serious problem of disposal. No medical treatment is of any use, and if these men were sent back to duty further psychopathic developments would be certain to occur and the lives of others might be endangered. Discharged to civilian life, they are a living invitation to seek escape through "neurosis" and a burden on the community. No satisfactory disposal is available; rejection at the recruiting station, or as early as possible during training, and direct drafting to a labour camp or rehabilitation centre, where suitable manual work is done under modified Service discipline, is urgently called for. Such centres would be valuable for many types of case besides those described here. Cases of deficient morale are uncommon, but the hysterical psychopath has often been met with among new recruits. Work and discipline are the best treatment for both, and when similar cases in the other Services are taken into account the problem is already large enough to justify prompt action. The enlistment, training, and hospital treatment of such men are an extravagance which, if it could be afforded in the past, must eventually be terminated by increasing financial stringency and demands for labour.

Summary

A brief description is given of some hysterical reactions and one case of defective morale which have been seen in the naval psychiatric service. An attempt is made to classify such reactions by means of an assessment of the symptoms in the setting in which they occur. This has been found to facilitate prognosis and appropriate disposal. The more general question is raised of the most useful and economical disposal of the psychopath in wartime.

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THE STABILITY OF TETANUS ANTITOXIN UNDER SUBOPTIMAL STORAGE CONDITIONS

BY

C. RUSSELL AMIES, M.D., D.T.M.&H.

(From the Serum Department, Lister Institute, Elstree)

Under normal conditions it is the usual practice to store sera and other immunological products at a temperature slightly above 0° C. At present, however, stocks of tetanus antitoxin and other sera have to be maintained at civilian first-aid posts and dispensaries where refrigerators are not available. Moreover, under war conditions it is not always possible to obtain cold-storage on ships carrying supplies of serum over-seas. It is therefore a matter of importance to know the rate at which antisera deteriorate under suboptimal storage conditions. Some information on this subject is already available, but the results obtained by earlier workers were derived from the study of sera of low titre, and it cannot be assumed that these apply to sera of high potency obtained by improved methods of immunization. It may therefore serve a useful purpose to record the results of some recent investigations of this problem.

The effect of temperature has been studied more completely on diphtheria antitoxin than on other antisera. Anderson (1910) and MacConkey (1913, 1917) reported that diphtheria antitoxin lost about 6% of its activity after being stored for a year in the refrigerator and about 10% per annum at 15° C. MacConkey (1913) also found that this antitoxin when stored at 36° C. lost half of its activity