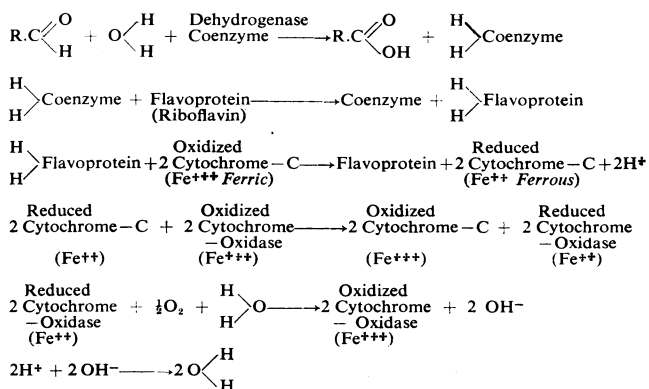


indicate the close association of riboflavin with the utilization of carbohydrate and oxygen.



Since riboflavin is associated with intracellular catalytic processes any deficiency may be expected to give rise to a metabolic disturbance in every cell of the body.

In the past it has been customary when thinking of any tissue merely to assume a cellular deficiency of riboflavin without considering how that deficiency comes about. I propose, therefore, to discuss some part of this problem.

The Role of the Capillary System

Perhaps we do not always realize that the vascular system has been developed for a single purpose—that of carrying to the immediate environment of each individual cell all the essentials to satisfy its needs, thus creating an environment comparable to that of a unicellular organism. The actual living parts of complex organisms are embedded in a fluid matrix constituting an internal environment the constitution of which normally remains constant—a condition referred to as homeostasis or homeokinesis. Claude Bernard (1878) was the first to realize this truth, crystallized in his expression—“*La fixité du milieu intérieur est la condition de la vie libre.*” This theme was further developed by Cannon (1930), and later was the subject of discussion by Barcroft (1934). Mechanisms have been developed in the body whose sole object is the preservation of this constant. As stated by Cannon: “The membranes which separate the vascular from the interstitial compartment and those which separate the latter from the intracellular compartments have peculiarities of permeability which maintain an unequal distribution of solutes in the three compartments.” Exchanges in one or other direction are effected by vascular adjustments controlled, it is now generally recognized, by a “capillariomotor system,” independent of the rest of the vasomotor system, by hormones, by local metabolites, etc.

The capillary system is therefore of prime importance, its welfare essential for the maintenance of the tissues in health; yet when Krogh (1929) published his monograph, *The Anatomy and Physiology of the Capillaries*, he remarked: “The capillaries constitute the most essential part of the circulatory system,” but added, “They have been neglected in an extraordinary way.”

Much work has been done on the subject by a number of investigators, including Dale (1918–19), Krogh (1929), Lewis (1927), Bordley *et al.* (1938), Wright and Duryee (1933), the Clarks (1931–2), Sandison (1928), Cobb (1927–32), Zweifach (1937–40), Sanders, Ebert and Florey (1940), etc.; but space forbids anything but mention of their names.

I cannot here go into more detail, but must be content to point out how *great* is the part played by the capillary system, how *many* its functions in the economy of the organism, and how *vast* its field of action.

To give a single example from Krogh: he calculated that the capillaries supplying the muscles of an adult man, which number 1,350 per square millimetre in transverse section, would measure 100,000 kilometres if joined end to end—i.e., would go twice round the world. Their surface would be 6,300 square metres. A simple calculation shows that if packed into a solid mass these endothelial cells would form an organ of

some size. The time has passed when the capillary endothelium was looked upon by the older physiologists as a passive, inert membrane, like a piece of gelatin governed only by simple physical laws. It is a tissue of great activity; it must need a considerable amount of energy in order to carry on its functions, yet nothing is known concerning the metabolism and respiration of its cells.

Many may have tacitly taken it for granted that a tissue which is in direct contact with the blood stream had merely to pick up what it wanted without any vital process being involved, but this is not consonant with Nature's methods. It may be assumed—and I think the assumption is warranted—that the endothelial cell respires in the same way as the cell of any other tissue, and that for its metabolic processes it must be supplied with sugar, oxygen, and all those other elements essential for cell life, including riboflavin. Having made this assumption, I am going to suggest that in the event of a deficiency in any one of these elements, or in some one of the elements—namely, riboflavin—the capillary endothelium will be one of the first, if not the first, of the tissues to suffer the effects of interference with normal respiration and metabolism. The result of this anoxia, in the wide sense of the term, upon the capillaries is a derangement of function, which I shall refer to as “capillary dysergia,” with the development of loss of tone, dilatation, and decreased flow. This in turn leads to a disturbance in the surrounding *milieu intérieur* and so to a metabolic disorder of the cells of the neighbouring tissue.

It is generally agreed that the relative number of capillaries is such, and their disposition so devised, as to accommodate the metabolic needs of each tissue in the body. This being so, I have suggested that manifestations of riboflavin deficiency will become apparent first in those tissues with high metabolic activity and a high degree of capillarity. By capillarity I mean the relative number of capillaries normally present in a tissue. The signs will be capillary dilatation, obviously only to be determined in some tissues; the symptoms, impaired nutrition and impaired function of the tissues. It is upon this basis that I propose to offer an explanation of the nature and distribution of the signs and symptoms of hypo-riboflavinosis.

(To be concluded)

TWO YEARS OF MILITARY PSYCHIATRY IN THE MIDDLE EAST

BY

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In his article “Three Years of Military Psychiatry in the United Kingdom” (*B.M.J.*, 1943, 1, 1) Brigadier J. R. Rees has presented a general survey of Army psychiatry in this country, setting out its development and present tendencies. The present article gives a survey of Army psychiatry in its application to an expeditionary force engaged in an active theatre of war.

Development and Organization

The development of a psychiatric organization in the Middle East dates from the appointment in Aug., 1940, of a Consulting Psychiatrist to the Middle East Force. The entry of Italy into the war in May, 1940, had marked the inception of a new phase in the military situation of the Middle East. With the arrival of large and constantly increasing drafts of men from all parts of the Empire it became evident that the provision of an adequate and organized psychiatric service was likely to become a matter of some urgency. The history of the psychiatric organization in the Middle East, originating as above, has been one of continued expansion. Before the arrival of the Consulting Psychiatrist no special facilities existed for the diagnosis and treatment of psychiatric cases, which were of necessity admitted either to the ordinary medical wards of a general hospital or, as in the case of psychotics, to small observation wards attached to two or three of the established military hospitals.

The situation in Aug., 1942, provided an interesting contrast. In place of the original limited observation wards there were by that date specialized psychiatric hospitals, centres, and psychiatric sections of convalescent depots. In addition to the original Army Consulting Psychiatrist, who, with the help of two specialists in psychiatry, was responsible for all the psychiatric cases arising not only in the Army but also in the Royal Navy, R.A.F., and the various Dominion and Allied troops, there were thirteen Army specialists in psychiatry and at least an equal number of graded specialists and medical officers solely engaged in psychiatric work, as well as psychiatrists attached to the other Services and the Dominion Forces.

In any consideration of the organization and work of the psychiatric services in the Middle East it is essential to realize the extent of the area concerned and the associated difficulties in travel and communication. The area included Egypt, Palestine, Syria, the Sudan, Eritrea and Abyssinia, Libya, Cyprus, and originally Iraq and Iran. The vastness of this area bore a direct relation not only to the problems arising in establishing a co-ordinated and organized psychiatric service itself but also to the problem of arranging for the evacuation of psychiatric cases; for example, the evacuation time between the forward areas in the Libyan campaign and a suitable base hospital or centre was rarely less than seven days, and was generally associated with a maximum degree of mental and physical stress and strain.

A second problem of very considerable practical importance was the wide diversity of races and nationalities encountered. During the course of 12 months in one centre alone, patients of the following nationalities were admitted (in addition to British and Dominion troops): French, Greek, Polish, Czechoslovak, Russian, Cypriot, Maltese, Palestinian (Jewish, Arab, and Christian), Turkish, Mauritian, Seychelles, Chinese, Portuguese, and various African races, including Kaffirs, Basutos, Bechuanas, Matabeles, Zulus, Swahilis, and Abyssinians. In addition German and Italian prisoners of war were admitted for treatment.

Incidence

The actual numerical incidence of psychiatric breakdown was considerable; but, judged in relation to the total numbers involved and to the extreme degrees of mental and physical stress and strain present in so many cases, it was perhaps surprising—as Surg. Capt. Curran has recently pointed out in reviewing naval cases—not that so many but rather that so few breakdowns occur. It is clearly undesirable at this stage of the war to give statistics of actual figures in detail, but it may be stated that the annual incidence of neurosis in the Middle East during the last two years has shown no significant variation from the figures obtaining in the last war.

It must always be remembered, however, that statistics and percentages by themselves give a very partial and inadequate picture of the situation as a whole. The amount of time and difficulty involved in the handling, evacuation, and treatment of psychiatric casualties is often out of all proportion to the actual numbers involved; and the potentially "infective" nature of psychiatric casualties is always a factor of considerable importance. There can be little doubt that if adequate selection of personnel had been employed before men were sent to a battle area a very marked decrease in the incidence of neurotic breakdowns, and a great improvement in the prognosis when breakdown did occur, might reasonably have been expected.

The aetiology of psychiatric breakdown may best be considered under the two main headings of predisposing and precipitating factors.

Predisposing Factors

(a) Psychopathic Constitution

The very great importance and significance of a psychopathic constitution, both as an aetiological and as a prognostic factor, was shown repeatedly throughout the period under review. An analysis of all admissions to one psychiatric centre during a six-months period showed that no less than 21.7% of neurosis and 23.8% of psychosis cases had suffered from a previous neurotic or psychotic breakdown; these percentages were even

more marked in regard to officers, among whom, in the same series, 46.2% of neurosis and 37.5% of psychosis cases had had a previous breakdown. A further analysis of the same series showed that, in addition, 38% of all anxiety neurosis and 33% of all hysteria cases showed evidence of markedly abnormal personalities before their present breakdown. The term "markedly abnormal" is here used advisedly: all these patients had shown evidence of relatively gross psychopathic traits in their previous histories, usually extending over a period of many years and dating from childhood and adolescence. These psychopathic traits were all of an accepted, obvious, and easily recognizable type, such as would have been clearly revealed by any careful case history; they did not rest on any abstruse or controversial psychopathological theory.

The significance of a psychopathic previous history was shown at every stage of the individual's military career. Many of these men broke down under the initial stress of embarkation for over-seas or during the voyage; and many required admission to hospital immediately upon arrival in the Middle East (thus 36 cases were admitted direct from convoys to one centre alone during the second quarter of 1942). A much larger number of individuals of this type broke down within a few weeks of arrival, and were completely unable to readjust themselves to the conditions of overseas service. An even larger proportion broke down before ever reaching a forward area. Cases of neurotic breakdown can conveniently be differentiated into cases of "battle neurosis" (cases breaking down under the stress of battle) and "neurotic sick" (cases occurring without relation to battle stress). An analysis of one large series of cases showed that 79% of the neurotic sick had a bad previous history, as against only 22% of the battle neurotics.

These factors are of the highest importance, because in the elimination of the misfits, of the chronic neurotics, and of the psychopaths lies the most direct and most hopeful method of prevention available to us. Very little can be done in an actual battle area to limit or alleviate the stresses and strains or to alter the adverse environment; and, given sufficient stress and strain, any person may break down. We can, however, and we should, sift out those who are likely to break down early—the weaker brethren, those who can cause difficulties and disharmonies and perhaps even disasters out of all proportion to their numbers, and whose presence constitutes a continued if only a potential menace to the morale of the group as a whole.

(b) Psychopathic Family History; (c) Morale

The significance of a psychopathic family history, although rather more difficult to assess, should not be underestimated; approximately one in five of all admissions in the above series showed evidence of a markedly psychopathic family history.

The question of morale, with all its implications, was of course of fundamental importance: faulty morale, indifferent training, or poor discipline provided a fruitful soil for the development of psychiatric breakdown. The series of African campaigns has proved beyond all shadow of doubt that half-trained, irresolute, incompetent men are useless in modern battles. The modern soldier, more perhaps than ever before, has got to be alert, competent in the use of arms of several varieties, self-sufficient, and resolute in situations in which he must act alone—situations often encountered by the need for dispersal.

Precipitating Factors

(a) General

Domestic Separation.—The disruption of family life, the impossibility of obtaining home leave, and the prospect of indefinite separation from the home and family were factors of the greatest importance, especially if—as was often the case—there was associated anxiety over illness of relatives, financial stress, rumours of marital infidelity, or news of enemy air raids near the individual's home. Much anxiety was felt throughout the command during the Battle of Britain, and quite a large number of serious breakdowns were precipitated by the news of certain towns at home having been bombed. These facts are perhaps of additional significance in the light of the recent R.A.F. offensive against the Ruhr. In this

connexion the very great importance of a regular and reasonably rapid mail service was in constant evidence—delay, irregularities, or non-arrival of mail were potent causes of anxiety and depression even in the most stable personalities.

Climate.—The trying climatic conditions prevailing in the Middle East—extremes of heat, shortage of water, flies, sand, and dust—were all important precipitating factors; on the other hand, it should be stressed that the effect of climate and temperature is essentially indirect, and is not in itself a direct cause of psychiatric breakdown: such terms as "tropical neurasthenia" are misleading, and are best avoided.

(b) Battle Stress

The term "battle neuroses" was, as already stated, applied to those cases of neurosis precipitated by the actual conditions of battle. Any of the above more general factors were, of course, liable to be associated in varying degree in the causation of battle neuroses, especially when combined with prolonged loss of sleep and extremes of physical stress and fatigue; and, conversely, the fact that the breakdown occurred during battle does not necessarily indicate that these battle conditions were in themselves more than incidental factors in the causation. In the great majority of cases of battle neuroses, however, the immediate precipitating factors could be accepted as being the actual conditions of enemy action.

The nature of the battle stress varied considerably with the theatre of operations concerned. In many cases the first symptoms of breakdown had appeared after the campaigns in Norway and France; in others, in East Africa or Syria. The majority of cases originated during the various Libyan campaigns or during the evacuation of Greece and Crete; or, in naval cases, during the course of the long and arduous naval operations in the Eastern Mediterranean. Without any question the most important single precipitating factor in the production of battle neurosis was continued dive-bombing or machine-gunning from the air, in the absence or relative absence of aerial protection, and most particularly when experienced under conditions of inactivity without the possibility of retaliation. The importance of this form of attack was shown repeatedly, and was out of all proportion to the actual number of fatalities caused.

The importance of the above factors was most pronounced during the earlier stages of the campaign, especially during the evacuation of Greece and Crete.

Table I shows the percentage of total cases (in a series of 633 consecutive admissions to one psychiatric centre) resulting from battle stress in the varying types of neurosis: figures for certain psychotic reactions, associated in origin with severe battle stress, are given for purposes of comparison.

TABLE I

		%
Anxiety neuroses	63.2
Hysteria	26.8
Other neuroses	19.0
Schizophrenia	25.4
Manic-depressive psychosis	7.7

The actual degree of battle stress varied, of course, very widely, ranging from sporadic high-level bombing to prolonged shelling, repeated immersions (in naval cases), and similar forms of severe stress. It is, however, of importance to note that breakdown from battle conditions was throughout the period relatively uncommon, and has become increasingly less frequent.

Clinical Types

Physical Exhaustion.—A recent analysis of battle casualties evacuated from a forward area showed that four out of five cases classed as "N.Y.D.N." were in reality cases of fatigue and exhaustion, and were without any deeper psychiatric significance. The importance, from the point of view of both prognosis and disposal, of establishing the true nature of these cases has been recognized in the revised *Nomenclature of Mental Diseases*, now in official use in the Army.

Neuroses.—The largest group of cases included under this title were those of anxiety neurosis, which accounted for over two-thirds of the total neurosis cases. Hysterical reactions occurred less commonly, accounting for approximately 20% of total neurosis cases. Experience in the Middle East therefore confirms the experience of other observers—that hysterical conditions are very much less frequent in this than in the 1914-18 war.

Anxiety Neurosis.—In the acute anxiety reactions precipitated by battle stress, disorders of behaviour were often prominent: acute panic reactions were common, often associated with episodes of extreme aggression or even violence. Semi-stuporous states were also of frequent occurrence. A querulous, resentful, anti-social attitude was often found in anxiety neurotics under treatment. Table II shows the percentage incidence of the main presenting symptoms in a group of 215 anxiety neurosis cases admitted consecutively to one centre:

TABLE II

	%
Depression	48.8
Anxiety	47.0
Headaches	42.3
Insomnia	38.3
Cardiovascular symptoms	30.5
Gross tremors	25.8
Gastro-intestinal symptoms	22.0
Acute panic reactions	22.0
Lassitude	19.7
Associated hysterical reactions	16.5
Phobias	11.2
Lack of concentration	11.2
Memory defects	4.7
Frequency of micturition	3.7

The above analysis makes no pretence to scientific accuracy either in terminology or in other ways, but it is perhaps of interest as a rough index of the relative frequency of the common symptoms. Two points of interest emerge from a study of these figures—the predominance of depression as a symptom, and the relative infrequency of psychosomatic symptoms of the cardiovascular type. The importance of depression as a presenting symptom was, in fact, even more marked than the above figures suggest, inasmuch as a certain group of cases usually diagnosed as anxiety neurosis had in the above series been classified separately as "reactive depression."

Hysteria.—Table III shows the relative frequency of occurrence of the main symptoms in a group of 71 hysterical cases admitted consecutively to one centre:

TABLE III

	%
Amnesia	21.0
Convulsions	19.6
Paresis or paralysis	18.2
Fugues	14.0
Blindness	5.6
Vomiting	5.6
Involuntary movements	4.2
Somnambulism	2.8

The cases of dissociation—amnesias and fugues—thus constitute the largest group (35%), and are commoner than cases of the conversion type.

Psychopathic Personality.—These cases accounted for approximately 6% of the total neurosis admissions to one centre; as might be expected, however, the difficulties presented by individual members of the group in treatment and disposal more than compensated for any numerical inferiority. It is notable, and in keeping with experience, that less than 10% of these cases were associated in origin with actual enemy action. One special group of these cases—the homosexuals—presented problems of especial difficulty in the Middle East, in relation both to treatment and to disposal; apart, however, from stressing the inadvisability of sending innate homosexuals (if diagnosed) to the Middle East or to any similar overseas station, it is not possible here to enter into any more detailed discussion of the clinical aspect of these cases.

Obsessional Neurosis.—Fully developed obsessional states were rare, but, when they did occur, were usually of unfavourable import and unlikely to respond to ordinary forms of treatment.

Psychoses.—The total number of psychotic cases admitted to hospitals and centres was considerably in excess of expectation. This excess could be explained by various factors—the most important being the wide variety of nationalities encountered, including large numbers of coloured troops, in whom the correct assessment and diagnosis of disorders of behaviour presented many difficulties.

Schizophrenia.—This was by far the most frequent psychotic reaction, accounting for rather more than 50% of the total psychotic cases. As noted during the last war, schizophrenic reactions developing during war were often of a more benign type than those developing under the more ordinary conditions of civil life.

Manic-depressive Psychosis.—Cases of manic-depressive psychosis accounted for approximately 30% of all psychotic cases; mania and melancholia were the presenting phases in an approximately equal number of cases.

Other Psychoses.—Psychoses attributable to infection (either acute or chronic) were uncommon. A very small number of cases of cerebral malaria occurred, and only one case of dementia paralytica (a Cypriot) was found in a series of over 1,200 admissions to one centre. Mental symptoms associated with heat hyperpyrexia were seen in a few cases, but in only one case in the above series was there any serious residual mental abnormality. A large number of

cases of pellagra were seen on one occasion among native troops; it was difficult to assess the degree of mental abnormality, if any, in these cases owing to language difficulties, but there was no evidence of behaviour disorders or gross mental change. Alcoholism in its various manifestations was fairly common, ranging from acute alcoholic episodes to chronic alcoholism and delirium tremens. Cases of psychosis in association with drug addiction were rare, consisting mostly of hashish addiction among the local native troops. A stuporous state lasting from 24 to 48 hours, and resulting from the consumption of "doped" alcohol in certain of the local establishments, was at one time fairly common, and led at first to some difficulties in diagnosis. Although epilepsy was fairly common, epileptic psychosis was rare.

Head Injury.—Psychosis associated with cerebral trauma was uncommon. The series of 633 admissions to one centre included only eight cases of post-traumatic personality change; this figure is, however, to some extent misleading, as the great majority of head-injury cases were admitted to and treated in the special neuro-surgical centre, and in consequence only cases with gross mental change were likely to be admitted to a psychiatric centre. From the somewhat restricted experience of post-concussional and head-injury cases gained at a psychiatric centre, the general impression was obtained that such cases are unsuited for service in tropical or subtropical climates.

Intellectual Defect.—Cases of congenital mental deficiency or of mental dullness and backwardness were unduly common, especially during the earlier part of the period under review. In the above series of 633 admissions there were 14 cases of mental dullness and backwardness and 27 cases of mental deficiency; of the mental defectives 23 were of the higher-grade, 2 of the medium-grade, and 2 of the lower-grade feeble-minded type. In seven cases there was a long record of delinquency and three had been certified as mental defectives before enlistment. The total number of mentally defective or dull and backward cases was very much greater than that given above, as many such cases were disposed of as out-patients and did not require admission to hospital. The following example provides a rather significant instance of this:

Twenty-seven men out of a draft of 80 posted to a certain unit were considered by the commanding officer as unfit to carry out the specialized duties required in this unit. On the advice of the unit medical officer they were referred to a psychiatric centre for an opinion. As a result of a careful and detailed investigation of each case, combined with intelligence tests, 7 were found to be higher-grade feeble-minded defectives; 11 were mentally dull and backward, and a further 6 were of subnormal intelligence, and unfitted for any form of specialized training.

Delinquency.—An increasingly large number of delinquents were referred to psychiatric hospitals or centres for an opinion, ranging in degree from the mildest cases of "absence without leave" to hardened recidivism. The commonest type of case, and the type that presented the greatest difficulty in diagnosis, was that in which a state of amnesia or fugue was put forward as a defence for absence without leave or desertion.

Malingering.—Deliberate malingering was in our experience rare; there were, however, the usual number of somewhat dubious borderline cases, which caused certain difficulties in diagnosis.

Treatment

In a general survey of this nature it is possible to give only a very brief summary of the various forms of treatment employed, and the principles underlying their application. In no field of medicine, and more particularly of military medicine, is the dictum "Prevention is better than cure" more applicable than in the handling and treatment of cases of psychiatric breakdown. It is far too late to start preventive measures—to develop selection of personnel, in other words—in an actual theatre of war; the best selection in these circumstances tends to be a haphazard and fortuitous process, and more often it will resemble a process of salvage rather than selection.

Selection, then, should start before entry into the Army; it should continue throughout the stage of training; and it should apply particularly to all drafts for overseas service, most particularly of all for overseas service in an active theatre of war. It should always be remembered that a soldier may be called into action the moment he arrives in a new country, often with little or no possibility of adaptation to a strange land, to a trying climate, or to the stresses and hazards of active warfare. It is useless to send men over-seas where their previous history indicates that early breakdown is likely—and this applies not only to cases of neurosis but to chronic delinquents: it was the somewhat bitter experience of most observers—combatant officers as well as psychiatrists—that the

character of the delinquent does not undergo any curious reformation or metamorphosis on leaving these shores. However careful selection may be, a certain number of cases of psychiatric breakdown will continue to occur, although here again much will depend on the general morale and *esprit de corps*, and on the training and efficiency, of the unit as a whole.

The conditions of present-day warfare, especially in the desert, present much difficulty in the handling and treatment of psychiatric casualties. Evacuation is lengthy, involved, arduous, and exacting; opportunities for adequate treatment in the field are few and the difficulties of such treatment may seem at times overwhelming. On the other hand, the further back a psychiatric casualty is evacuated the less is the probability of his ultimate return, the worse is the prognosis as regards his ultimate efficiency as a soldier, and the more serious may be the effect upon the other members of the unit.

Treatment therefore must be immediate; its application must be measured in terms of minutes rather than hours, and of hours rather than days. It must be immediately effective, and it must remain effective. It must be simple, uncomplicated, and at the disposal of every R.M.O. It is unlikely that specialist advice will be available in more than a small percentage of cases, and the R.M.O. must therefore have a working knowledge of their diagnosis and treatment. The only feasible method of immediate treatment is by physical measures; the cardinal factor throughout is rest, and in these circumstances rest can only be procured by full sedation. The choice of sedative depends on various factors, one of the most important naturally being the range of drugs actually available. Alcohol and morphine are of use in emergencies, but the small bulk and ease of administration of the barbiturates (e.g., barbitone or phenobarbitone) make these drugs the most generally acceptable. Intramuscular injections should be given where necessary. The dosage must be adequate; too little is usually given, and it is important that adequate sedation be maintained throughout the period of evacuation to the base, if such evacuation should prove necessary.

The methods of treatment applied in the later stages do not differ materially from those applied to the neuroses in general. Prolonged narcosis was used extensively in the treatment of acute anxiety states in base centres and hospitals, and was found in most cases to be the method of election. It is of some importance to note that prolonged narcosis presents certain dangers in tropical or subtropical climates, and several cases of hyperpyrexia occurred during treatment, presumably due to disturbance of the heat-regulating mechanism.

The intravenous injection of a suitable barbiturate, reinforced by suggestion and the appropriate psychotherapeutic measures, proved a most valuable form of treatment in effecting the removal of conversion symptoms or the restoration of memory in hysterical amnesias or fugues; in many cases the early application of these measures restored function and allowed of return to duty without evacuating the patient to the base.

Emphasis has been laid above on physical methods, which, indeed, provide the only practicable form of first-aid treatment in the great majority of cases in a forward area. In the psychiatric hospitals and centres at the base a much wider scope and range of treatment was available and used. Psychotherapy was employed—usually in its simpler forms—in all cases, and under the general heading of psychotherapy may be included the invaluable help rendered in many cases by the chaplains of the various denominations and by such organizations as the S.S.A.F.A. Fully equipped occupational departments were provided in each centre as well as the various recreational activities and excellent libraries provided by the B.R.C.S. The importance of semi-military training in the treatment of neurosis cases, not only for its own sake but as a preparation for return to duty, was recognized, and such training was used to an increasing extent. An insistence on a reasonable degree of military discipline in the treatment of neurosis cases in general was considered of great importance, and produced very beneficial results.

Prognosis: Results of Treatment

It was decided at the beginning of the period under review that as a matter of general policy it was of the utmost impor-

tance to retain, so far as was possible, all cases in the command on at least some form of duty, and to confine evacuation out of the command to psychotic cases and those neurosis cases in which, for various reasons, the ultimate prognosis was regarded as very unfavourable. As a result of practical experience this policy was further developed, and it was decided that psychotic cases, after recovery and if considered suitable on other grounds, should also be retained in the command. This rather radical revision of policy in the case of psychotics was adopted only after careful consideration, but has already proved successful in practice.

The following statistics are of interest in assessing the prognosis and the results of treatment. In a series of 350 consecutive cases of neurosis discharged from one psychiatric centre during the six-months period July to Dec., 1941, 71.5% were returned to duty (53.7% to full, 17.8% to base duties); the average duration of stay in hospital for these cases was 25 days. During the three-months period April to June, 1942, 625 neurotic and 216 psychotic cases were discharged from one hospital: of the former group 92% were returned to duty (61% to full, 31% to base duties); of the latter 70% were returned to duty (48% to full, 22% to base duties).

Follow-up.—A careful follow-up system was employed throughout the period under review. An analysis of the results of the follow-up suggested that not more than 5 or 6% of cases required readmission to hospital or centre; this figure compares satisfactorily with those given for the war of 1914-18. It should be remembered that such cases of relapse as do occur do not necessarily represent a pure loss to the Services; during the interval before relapse occurs they may be, and in very many cases were, of the greatest value to the Army.

Conclusions

The results obtained during the two-year period under review have been reassuring, and the high proportion of patients returned to duty has demonstrated the practical value of specialized psychiatric units and treatment. The indifferent quality of many of the drafts sent over-seas was often only too obvious, and has been indicated in some detail in the earlier sections of this paper; not only were many of these men unsuitable for service over-seas, but in many instances they were, as has been stated elsewhere, "candidates for hospital treatment on enlistment." It is clear that the efficiency of an expeditionary force must suffer if it includes large numbers of officers and men who, by virtue of their previous histories, are likely to develop a psychiatric breakdown.

The value of an organized system of personnel selection was thus shown in a very practical form throughout this two-year period, and it is difficult to avoid the conclusion that, had the system of personnel selection which is now applied to all recruits on joining the Army been applied from the beginning of the war, a very large proportion of the psychiatric casualties in the Middle East would have been avoided.

Summary

An account is given of the organization and development of the psychiatric service in the Middle East Force.

Details of the incidence of psychiatric breakdown in the Middle East Forces are provided.

The various aetiological factors are discussed, with particular reference to the significance of a psychopathic previous history in determining the likelihood of future breakdown.

A brief account is given of the various types of clinical cases encountered.

Details are presented of the main forms of treatment employed.

An analysis is given of the results of treatment, with details of the percentages of cases returned to duty.

The very great importance of personnel selection is stressed.

I wish to record my gratitude to Brig. G. W. B. James, *M.C.*, Consulting Psychiatrist, Middle East Force, to whose inspiration, energy, and wide understanding the organization and developments described above are due, for his advice in the preparation of and his permission to publish this paper; to Brig. H. A. Sandiford, *M.C.*, Director of Army Psychiatry, and Brig. J. R. Rees, Consulting Psychiatrist to the Army, for their continual encouragement and assistance; and to the medical and nursing staff and the R.A.M.C. personnel of No. 1 Psychiatric Centre, M.E.F., whose enthusiasm and co-operation made possible so many of the results detailed above.

DIAGNOSIS AND TREATMENT OF LESIONS DUE TO VESICANTS

BY

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In spite of the increasing air superiority of the United Nations the possibility of gas being used in this war cannot be ignored. The enemy might use it during any critical stage of military operations. Moreover, it would be dangerous to assume that we shall never see any cases suffering from the effects of gas, as they may result from accidents which occur from time to time. Methods of defence rapidly overtake new and unexpected methods of attack, so that no weapon ever again achieves its initial success. Had the Germans appreciated the success of their first gas attack in the last war the final result might have been very different. Should gas be used we can expect it on a large scale, with indiscriminate mixing of blister, choking, and harassing varieties—the characteristic smell possibly being disguised—plus high-explosive and incendiary bombs. With this in mind, it is important to simplify the anti-gas teaching, so far as is possible, reliance being placed on a few common-sense principles.

The gas discipline of the Services has received a great deal of attention and is so good that nothing but a nuisance effect is likely to be achieved against them. Civilians, however, who have not received special training are likely to be far more vulnerable, and the effect of panic must not be overlooked. It is essential for the able-bodied to help themselves by means of the gas-mask, removal of clothes, and immediate treatment with ointment, leaving the official anti-gas parties free to handle those who cannot help themselves.

The first attack may be at night, and if the action of the gas is a delayed one its presence may not at once be recognized. In consequence, the medical profession will be faced with a large number of cases suffering from lesions of the eyes, respiratory tract, and skin, some hours after the time for effective prophylactic treatment has passed. Subsequent attacks will be countered more easily, as the population will be prepared and suitable prophylactic measures can be taken immediately.

In order that protection may be available at the earliest moment the clinical diagnosis of the first cases is most important, and will largely be the doctors' responsibility. If the doctor suspects gas has been used he should at once get in touch with the nearest A.R.P. Report and Control Centre, whose responsibility it is, so as to obtain confirmation from their Gas Identification Officer. We must remember that the lethal effects of any gas are most commonly produced by inhalation, the next most serious danger being injury to the eyes. Skin lesions, although a major nuisance, will cause less loss of life than similar conditions due to thermal burns, and are certainly less severe than the injuries caused by high explosives. The gas-mask must always be the first line of defence, and it is important never to lose sight of this when devising other methods for prophylaxis. The immediate removal of contaminated clothing is equally important, as it reduces the risk of injury to the person concerned and the possibility of spreading the material to others.

MUSTARD GAS

Prophylaxis

Eyes.—Constant protection of the eyes by the eye-shield or gas-mask is of first importance. If liquid should enter the eye immediate mechanical removal by copious washing with water, saline, or other bland fluid is essential. If carried out within two to three minutes of contamination it will probably save the eye; if delayed for longer it is of little value. Care must be taken to see that material from the surrounding skin is not washed into the eye. However, if the eye is affected only by vapour, washing will do more harm than good. So much stress has been laid on the importance of early irrigation of the eyes that there is a tendency to forget that it is equally important to get rid of contaminated clothing. If help is available the two should be done coincidentally.

General Principles for Skin Cleansing.—Three methods are available—mechanical removal, dilution and removal by washing, or chemical neutralization—before the vesicant can penetrate and produce its local and systemic effects. As the effective dosage of liquid