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EFFORT SYNDROME IN SOLDIERS *

BY

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The problem of effort syndrome arises from the urgent need for men, and so it is first of military and secondly of medical importance. In war a maximum number of soldiers must be drawn from the mass of civilians accustomed to peace. The majority change over successfully from the occupations they had chosen, and by time and training become fit and often eager soldiers. But such a shift from home and work to a novel and strenuous life with drill and marching with heavy equipment is not possible to everyone, and it is disagreeable to some. All men are not equal under the test of war. Symptoms that were absent or so unimportant as to be ignored in peacetime begin or become aggravated under the stress of war. If a recruit has acquired no liking for soldiering he will complain the more easily and persistently. However that may be, he may be forced to admit his incapacity by complaints so similar to those of others that they are clearly genuine.

As the human organism does not give way as a whole, even when the whole being is on trial, one organ or system will first betray distress. It is commonly the nervous system—not surprisingly, because of the difficulty of adjustment to war and because nervous disorders are already so widespread in civil practice. In others the heart—or rather the circulatory system—will testify to the stress and present the symptoms. These may so strongly suggest a heart disease that only a painstaking examination will exclude it. D.A.H. (disordered action of the heart), now officially styled effort syndrome, was not invented by the R.A.M.C. in the last war; it was thrust upon them and so labelled in default of a better term. It is true that about a half had similar symptoms in civil life, but these were rarely combined to give a composite picture like that of effort syndrome in the Services. It constituted a big military problem because of the wastage of men it caused. Investigation showed there was no demonstrable organic heart disease. Questioning alone cannot distinguish these cases of effort syndrome from those of early valvular disease (V.D.H.). The part played by the nervous system, especially in the realm of psychology, was admitted, and influenced treatment, but it was insufficiently studied in the war of 1914–18.

The failure of heart disease is not the only way the circulation fails to respond to stress. With his nerve impaired the athlete may be dead-beat from an extreme test of endurance. He is exhausted and breathless, his heart is racing, and it is reasonable to believe that it is the circulation which sets the limit. Other systems—the vasomotor, the endocrine, and the respiratory with its chemical regulation—will share in the test and doubtless in the failure, but the reserve power of the heart is

that which ultimately rations output. In effort syndrome we are dealing with men of every degree of non-athleticism and of physical and nervous inferiority, and when they undertake more than their low capacity for effort they also fail with exhaustion, dyspnoea, and palpitation—proof enough that their circulatory system cannot cope with the strenuous task of a soldier. Again, as in the athlete reaching his limit, the other systems named will doubtless take part in failure of the co-ordination which is essential to purposeful effort. An expression of this idea is seen in the term “neurocirculatory asthenia” (N.C.A.), applied in the United States to the condition we call effort syndrome. Our own term is not ideal, for it might suggest that in effort lies the origin of the disability, whereas effort merely reveals it. Further, the symptoms, while accentuated by effort, are often present at rest. But we are well rid of the terms “soldier’s heart” and “D.A.H.” Allbutt said that as “a series of symptoms recurring with a fair uniformity” he did not hesitate to look upon it as a disease. Its true nature is not yet known, but the full picture which bulks in war is only sporadically encountered in peacetime. Tentatively I would define effort syndrome as a functional circulatory disease, most evident on exertion, unmasked or produced by war service. It is hoped that the experience of this war will provide a better name, a more satisfying definition, and a clearer understanding of this condition.

The rarity of effort syndrome in the Navy and its infrequency in the Air Force have been much remarked, and the explanation is not obvious. Volunteers are in greater proportion in these Services; besides, they do not demand so uniform or so arduous a training of such a multitude of men for the toil of marching with heavy equipment.

The type of effort syndrome will vary to some extent with the kind of warfare being waged and with the class of patient studied by a particular observer. Thus in 1916 in France the soldiers were regulars or volunteers who had been fully trained, and many had been long and honourably engaged in trench warfare. The infectious group was fairly large, and the nervous group seemed smaller than the constitutional. In contrast, at the end of that war most men with D.A.H. returned to some civil employment and got well, many soon ceasing to be eligible for pension. The residue was largely composed of psychoneurotics, still clamant for their pensions, and psychotherapists were engaged in describing and treating this group. It cannot be doubted, too, that men originally reporting sick with typical effort syndrome may, with protracted idleness and numerous hospital transfers, acquire neuroticism as a sort of parasite.

In the present war, conditions so far seem to have produced a preponderance of the psychoneurotic type, and a greater proportion of those who had similar symptoms

* Based on a lecture given before the Royal Air Force Medical Society at Halton in October, 1940.

in civil life. Indeed, some current opinion is inclined to the view that effort syndrome is simply a psychoneurosis. It is not certain how far this definition will carry us, because the term can be so readily applied to any form of ill-health which is imperfectly understood and unaccompanied by organic signs. After all, psychological variations and faults in healthy people are common enough. It could only be a bar to medical progress if psychoneurosis (or psychosomatic disease) remained a label and became a dumping-ground for most unexplained illness, much as did "neurasthenia" in the past. It is still to be decided how far psychotherapy is rational and effective treatment; besides, an explanation for the predominance of circulatory symptoms, the relation to effort, and the relative uniformity of the clinical picture is not yet forthcoming. Certainly the time is ripe not only for psychological but for other investigations, as it would appear that autonomic nervous, endocrine, respiratory, and metabolic factors may also operate in effort syndrome, and will also engage the attention of the physician seeking a wider conception of its essential features. Doubtless this expanded approach has much to commend it, and will deepen and broaden our vision of what is at present obscure in the rationale of effort syndrome.

Aetiology

It is a fact that many, perhaps half, of the patients with effort syndrome give a circumstantial account of some similar symptoms in years preceding the war. These have seldom had the characteristic grouping or been severe enough to interfere with a sedentary occupation, to which indeed men may have drifted because of physical limitations: In civil practice the composite picture of effort syndrome seldom appears, or it is lost among the familiar but ill-understood symptoms which baffle doctors. It never obtrudes as a large and urgent problem in peace as it does in war. No fewer than 44,000 soldiers became pensioners for effort syndrome after the war of 1914-18.

The causes are often multiple, and this should be remembered in any attempted classification.

1. Constitutional

A man may be so ill-endowed in his physical frame or in his nervous make-up (and maybe in both) that he is thereby unfitted to become a soldier. A wretched upbringing, a poor physique, and a lack of vigour may be his permanent handicap. He may never have proved strong, either for games at school or for heavy work later. He is constitutionally a weakling, inapt for war, and training will never make him fit for it. If this could have been recognized at his first medical board he would have been rejected on this score, and there would have been one less of the "effort syndromes" in the hospital, before the medical board, and as an aspirant for a pension.

2. Psychoneurotic

From a faulty heredity, from maladjustment to the problem of living, from subconscious repressions, inhibitions, and conflicts, from excessive anxiety or hardship, singly or combined, a man may suffer from some psychoneurosis, commonly an anxiety neurosis, and his symptoms may arise entirely or partially from this cause. A few realize their inferiority and develop the complex with its sapping of nervous stamina. The cardiac bias is hard to comprehend, but it may originate in the special physical demands upon a soldier, especially when clad and cumbered so unlike an athlete. The neurotic, however strong physically, seldom succeeds in athletics.

Here should be mentioned the factor of like or dislike for soldiering. Some find in it a virtue and a fulfilment, better health and good comradeship, and occasionally a solution of some personal or even domestic problem. Quite a number of men, not cowards, dislike the idea and still more the process of training and discipline, which are essential. With no zest for the fight, and lacking spirit if not courage, they take refuge in sickness as a means of escape. Occasionally, too, there are men convinced by some careless or ill-founded

suggestion of a "weak heart," and by past restrictions, that it is unsafe or beyond their powers to undertake full exertion. Related to this class are those whose nervousness is side-tracked into a belief or a cherished dread that their heart is diseased, and who cannot be dissuaded from that obsession. Such cases have been termed cardiac neurosis proper. More numerous are those who cling to the idea of heart trouble to escape what unhappily exposes them to scorn by the laity, the imputation of neurosis. Incidentally, knowing the explanation to be inadequate, we should not be misled by the man who ascribes his condition to some event, such as a minor infection or accident, which coincided with and perhaps faintly determined the onset of his symptoms.

3. Infection

The incidence of rheumatic fever in the history of soldiers with effort syndrome is higher than in that of healthy soldiers. In a control series of 1,000 slightly wounded men 5% gave a circumstantial history of acute rheumatism or chorea, while 12% of 500 men with effort syndrome gave that history. This almost suggests that rheumatism can produce, without valvular lesion, a permanent but minimal grade of myocardial inferiority. If it does, nothing would prove it so well as the ultimate development of auricular fibrillation, paroxysmal or established, in those suspected of such occult rheumatic myocardial involvement. The history of older patients contracting fibrillation, and having no other mark of rheumatism, not infrequently does include rheumatism in childhood. But the hypothesis lacks proof. The interesting suggestion has been made that the greater incidence of a rheumatic history in effort syndrome is explained by the meticulous precautions to which they have been subjected. Thus after uncomplicated rheumatic fever a boy is sometimes forbidden school games for a protracted period, losing their benefit, besides acquiring an unfounded distrust in his cardiac capacity. This may explain some cases, but hardly all.

There is no doubt that recent infections may occasion symptoms of effort syndrome when the convalescent returns too early to physical exertion. It was a commonplace in the war of 1914-18 for a soldier to contract P.U.O. (pyrexia of unknown origin) in the trenches, return to a base hospital, then to a convalescent depot, from which he was too soon drafted back to the line owing to urgent need for fighting men. He often returned quickly to the base with typical symptoms. In the Middle East amoebic and bacillary dysentery similarly proved a potent source. The lesson is clear: adequate convalescence after general infections in soldiers pays by preventing effort syndrome. Indeed, this has now been recognized in the excellent proposal that such men should retain the "diagnosis" of convalescence and only acquire that of effort syndrome when this can no longer be deferred. More, there is the interesting suggestion that such obvious cases of insufficient convalescence should not be included at all under any discussion of effort syndrome. Against this is the fact that the clinical picture may be identical with that of cases attributed to constitutional or psychoneurotic origins, and that it is awkward if a patient under treatment by the Medical Services is without a relevant diagnosis.

4. Myocardial Deterioration

In men over 35 or 40 the functional capacity of the heart has often appreciably lessened when compared with that at the age of 20 to 25; the more strenuous sports become unsuitable, though there are many exceptions. In reverse there are also exceptions. Many cases of coronary thrombosis have been reported under the age of 40, and so it is likely that there are lesser grades of coronary disease which contribute to or represent the ageing process as manifest in a diminished capacity for effort. Except in the extreme cases, we know little about this factor, and even less about the early effects of oncoming hypertension. The lesson is that here is an opportunity to extend our knowledge of the early effects of coronary sclerosis and of hypertension—to antedate them, as it were—for we have under medical supervision a multitude of men who would not be patients at all in peacetime, but who in war may report sick with symptoms which war effort evokes. Be that as it may, if we are to contact more closely with the beginning of disease, careful cardiological examination is even more necessary in men of 35 and over than in

the younger; and electrocardiography and radioscopy will sometimes be needed for the purpose. The fear that a thorough examination will harm by starting the idea of heart disease is unworthy and unwarranted. But morbid ideas may be bred by routine and superfluous examinations, especially when prolonged residence in a military hospital is improperly permitted.

Symptoms

The symptoms are almost invariably multiple, and often there is no particular stress on any one of them. The major are exhaustion, left mammary pain, palpitation, dyspnoea; the minor are dizziness, faintness. They are evoked by exertion such as drill or marching, though later they may recur at rest.

Exhaustion.—Nearly all complain that they are easily tired, and it may be this which limits their activity. Often a feeling of lassitude makes any activity distasteful. Undue fatigue is one of the most widespread of human complaints, and seldom does it point clearly to any diagnosis. In default of signs it is often correctly attributed to the nervous factor; for it may be purely psychological, though it may equally be regarded as a signal of general ill-health. Alone it should never suggest actual cardiac disease, of which the characteristic is dyspnoea.

Left Mammary Pain.—This is a poor appellation for what is common (young men excepted) in civil life yet a frequent complaint in young men with effort syndrome. A large proportion, perhaps 40%, complain of it; indeed, this is the closest link between the symptoms of effort syndrome and those of civilian practice. Its site at or below the left breast, its character of aching with occasional stabs, its occurrence maybe for hours during rest as well as after exertion, are features which readily and sharply contrast it with cardiac pain (angina pectoris). Inveterate cases have local tenderness, as disclosed by the pressure of a stethoscope. No patient should ever be permitted to speak of left mammary pain as "pain in the heart," for it is this symptom more than any other which suggests to him the false and dangerous idea of heart disease. No fixation of fear should be allowed to develop from a fixation of interest.

Palpitation.—Palpitation is consciousness of the heart's action, and healthy people experience it under sufficient exercise or emotion. It is noticed too readily by men with effort syndrome, and may, like left mammary pain, make them doubt their heart's integrity. The conversion of a natural sensation of stress into a medical symptom depends mostly on the presence of a heightened or morbid sensibility from ill-health, and this is best proved in the cases in which actually there is little or no tachycardia. Compare such a sensitive man with the subject of fibrillation, who will complain of dyspnoea but often fail to notice his rapid and irregular heart. As some tachycardia, excessive on exertion, is the rule in effort syndrome, palpitation is a frequent symptom. If there happen to be a few extrasystoles these may augment it. With a given task it is most often the combination of palpitation, fatigue, and dyspnoea which defeats the patient and displays his malady.

Dyspnoea.—Although dyspnoea on exertion as a single symptom is so characteristic of cardiopathy, combined with other symptoms it appears more commonplace and less significant. It depends so much on the "condition" of healthy people and their age; it is expected in convalescents as it is in neurotics, in various infections, and in anaemias even of moderate grade. Dyspnoea is by no means always the chief symptom of effort syndrome, but it is generally included with the others. On direct inquiry it will always be admitted—impaired general health from whatever cause almost connoting short-windedness as a by-product. Interesting is the static dyspnoea (dyspnoea *at rest*) which in the absence of signs of organic disease is so often a manifestation of nervous instability or exhaustion and which is sometimes seen in effort syndrome. It may be a curious feeling of inability to take a complete and satisfying breath. This is not quite the same as "sighing respiration" (suspiration), though closely allied to it. Of course, such dyspnoea at rest without extreme dyspnoea on exertion and without cardiac or other signs is easily placed in its true category.

Dizziness and Faintness.—Dizziness may be no more than a momentary sensation of imbalance, and faintness no more than a transient sensation such as that which precedes a proper faint (i.e., syncope). They are so closely allied that patients often fail to make a distinction. Both are common in healthy people under certain circumstances and during temporary impairment of health, and especially with the weariness of increasing years. Similar sensations may swell the symptoms of effort syndrome, but they are seldom of as much account as a man may make out. Indeed, nothing lends itself so readily to exaggeration as a dizziness or faintness, for being rarely demonstrable it is difficult to disprove. It should not be fed by attention, always provided that aural and cardiovascular disease have been excluded.

Fainting or syncope is or should be a term reserved for attacks with loss of consciousness, and these are not especially common in effort syndrome: any soldier may faint on a parade ground. Syncope is one of the rarest symptoms of heart disease, though the public think otherwise. Recurrent faints are uncommon and may really be epilepsy.

Signs

Viewing the varied aetiology, it will not be expected that much can be learned from the general appearance. Some appear nervous or anxious, others are weary-looking; many look and act like any other soldier, but the seemingly well have their complaints, and looks should not heavily discount them. The examiner may judge them to be exaggerated, and occasionally he may sense a desire to shirk duty; but in fairness he must question and examine the man first as a doctor, and then assess his ailment as a medical officer.

Tachycardia is easily the commonest and often it is the only cardiac sign. It is generally moderate, at a rate of 80 to 100, though sometimes rates of 100 to 130 form a striking feature. There may be no tachycardia at all, or it may not be noticed but for the pulse count. Some tachycardia early in a medical examination is commonplace and insignificant, and some men have a higher natural rate than others. During the course of the examination, and especially with recumbency, it should disappear; if it does not, more notice—but not impressive or alarmist notice—must be taken of it. Extreme tachycardia suggests a preponderant nervous factor, in the absence of paroxysmal tachycardia and flutter and if pyrexial or thyroïdal stimulation can be excluded.

Examination of the heart results in normal organic findings. The heart sounds are normal, and the loud first sound natural to tachycardia should not be misinterpreted. Similarly, a short soft systolic murmur difficult to hear can be ignored. Any wincing when the stethoscope is applied is a reminder that mammary tenderness is common with left mammary pain of long standing. The respiration is sometimes irregular or momentarily rapid under medical questioning. When dyspnoea at rest is a complaint it may be the inability to take a deep or satisfying breath or the sighing respiration already mentioned. Nervous tachypnoea is uncommon.

The blood pressure is normal. Even in young and healthy recruits, with the excitement and associated tachycardia of a medical examination, the systolic is not rarely 160 to 170, but it will fall shortly during recumbency, and the diastolic will not exceed 90. The blood pressure can scarcely be too low; certainly any figure between 100 and 110 systolic is to be regarded without suspicion and perhaps as a favourable sign. It is to be hoped that the fashion of imputing ill-health to "low blood pressure," often as a sop to the neurotic in civil life, will not extend to the Services.

Sweating may be too easily provoked, and sweat dropping from the armpits during medical examination was a familiar sight in the last war. Another sight was the

man who broke off during drill with a coarse and widespread bodily tremor; but such usually showed other stigmata of nervous unrest.

The *exertion test* has a limited but not a great value, if only because many with effort syndrome give a normal response, as in fact do some hospital patients with cardiac failure and oedema! It is better termed the pulse response test, as in the R.A.F., than the exercise tolerance test. Such slight exercise as is used can in no way compare with the real drill or marching with equipment which originally made the man aware of his disability. The idea is that in health the pulse should return to normal within a minute of a test exertion, but there are so many exceptions to this arbitrary rule, and such wide individual variations in effort syndrome, that it takes a minor place in the summing-up and assessment. It does tell us something of the nervous control of the heart rate in a particular man on a particular occasion. More useful is the recognition of an undue degree of dyspnoea or distress from so slight an act of exertion. But here again, as in the nervous control of rate, who shall say what degree of improvement and stabilization may not be obtained by routine Army training? That is what it is for.

Differential Diagnosis

1. *Organic Heart Disease*.—The symptoms of effort syndrome are often grafted upon those of true heart disease. Whenever there is a history of rheumatic fever or chorea, or the patient mostly blames dyspnoea for his incapacity, *mitral stenosis* may be developing. Suggestive are a constant long systolic murmur or a loud first sound; and diagnostic will be the presystolic rumble preceding the loud first sound and best heard at or mesial to the apex, immediately after the subject exercises and lies half over on his left side. After the presystolic murmur there is no more authentic sign than the radioscopic—in the right oblique position, an enlarged left auricle displacing the oesophagus backwards. When the apex beat is displaced and forcible, often with a systolic murmur there, *aortic incompetence* is likely. This lesion is fairly common. With the patient leaning forward, the breath held after expiration, the observer listens intently at the aortic area and down the left of the sternum for the softly blowing diastolic murmur which follows close upon the second sound.

Angina pectoris, uncommon before 40, gives sternal pain or pain across the chest during exertion, and that as the only disabling symptom. This contrasts with the left mammary pain, an ache more or less continuous, lasting for hours and occasionally interspersed with a momentary stab, which a proportion of men with effort syndrome will report. From its position they may fear it is from the heart, especially if it occurs during or more typically after exertion. But it persists also during rest and even for a large part of the day. It may extend to the lower angle of the left scapula and occasionally above the left breast and even to the left arm, but never to the right arm or to both, or to the jaw. A simple table may help.

<i>Angina Pectoris (Effort Angina)</i>	<i>Left Mammary Pain</i>
Pain the only complaint.	Multiple complaints.
Uncommon below 40 years.	Age 20 to 55 years.
Sternal or across chest.	Left mammary or submammary.
Arresting pressure.	Ache (sometimes stabs).
During exertion only.	After exertion; when tired.
Brief—1 to 5 minutes.	Continuous—hours.

Other *myocardial disease* is also rare under 40, and dyspnoea would then predominate and clinical or electrocardiographic signs would be found. Emphysema may be mistaken for it. *Paroxysmal tachycardia* is characterized by occasional attacks of palpitation with a high tachy-

cardia (120 to 220) that begin abruptly, last some minutes or hours, and end suddenly. The sudden termination confirms the diagnosis more surely than the sudden onset. It is no more common in nervous than in other patients.

2. *Neuroses*.—When the chief complaints of a patient are of "nervousness," headache, fears, depression, weakness, and insomnia, and he presents a "nervous" manner, being restless, excitable, tremulous, and even emotional—provided other abnormal signs are absent, a doctor will recognize that he is faced with a functional nervous disorder, often an anxiety neurosis. Such is not effort syndrome. This is distinguished by an assemblage of prominent circulatory symptoms primarily related to exertion, any distinctly nervous symptoms being less troublesome to the patient and less apparent—if present at all—to the examining medical officer. This does not exclude, of course, a psychogenic element in their production. Incidentally, sleeplessness, indigestion, and severe headache are uncommon in effort syndrome.

3. *Pulmonary Tuberculosis*.—A history of pleurisy or a family history of chest trouble, with complaints of cough, wasting, loss of strength, perhaps pleuritic pain, would point to pulmonary tuberculosis. This was the only disease which counted much in the after-history of effort syndrome in the last war. The man may be thin, the skin ill fitting and moist, the pulse frequent; but tachycardia without other signs seldom implies tuberculosis. Auscultation of the lungs, the evening temperature, sputum examination, will follow. But radiography for early diagnosis is indispensable, and far more informative than the stethoscope.

4. *Hyperthyroidism*.—Especially in any high degree of tachycardia, the thyroid gland will be scrutinized; and, conversely, without tachycardia the idea of goitre may be dismissed. The subject should sit leaning forwards, raising the chin, and then swallow. The standing observer can then best see any fullness or asymmetry of the gland. There may be wasting, fine tremor of the fingers, and even a hint of exophthalmos. The hands are warm, not cold as so often in effort syndrome. The B.M.R. may help.

5. *Hypertension*.—This is so often found in middle age that it ought to prove possible to recognize the earlier stage in a proportion of the men of 30 to 40 now called to the colours. A closer study on these lines, with correlation of slight symptoms and signs (if any) with blood-pressure readings, might add much to our scanty knowledge about early hypertension. Under excitement and with tachycardia, the systolic level in health can reach 160 to 170, though subsequent readings will seldom exceed 160. But a diastolic level of 90 to 100 makes a pathological hypertension likely, and patient research might teach us much about this critical level. An obtrusive apex beat, a loud aortic second sound, and sometimes a mitral systolic murmur are well-known concomitants, and there may be albuminuria; but repeated sphygmomanometric readings alone can establish the diagnosis.

6. *Various*.—A number of other diseases figure in this differential diagnosis or bear upon it. They include chronic bronchitis, emphysema, asthma, pleurisy; anaemia (primary or secondary); renal disease; aural vertigo ("dizziness"); epilepsy ("fainting"). It may be said that malingerers are few, shirkers not a few, exaggerators common. The important tetrad in differential diagnosis is valvular disease, pulmonary tuberculosis, hypertension, and hyperthyroidism.

Prognosis

The most promising cases are naturally those of men with slight symptoms of recent origin who want to get well and remain with or get back to their comrades. Men with symptoms following close upon some acute infection will

often lose them if they receive consideration and a sufficient convalescence. Where symptoms are of long standing, and where considerable tachycardia persists, the prognosis as to improvement is poor, especially in men intent on being discharged from the Army and therefore disposed to nurse any malady instead of combating it. Those with any long persistence of left mammary pain are unpromising. The more the nervous and psychic symptoms colour the picture the more problematic is a return to full duty. Graduated drill is intended not only as a part of treatment but as a means of sorting and assessment for grading.

The first concerted research on effort syndrome (D.A.H.), at Hampstead in 1916, was conducted on the most "typical" cases available, and the inferences therefrom as to prognosis are inapplicable to the majority. Later in the war prognosis improved, especially among men treated by medical reassurance, drill, and games, and those who remained in France in convalescent depots. About 50% recovered, and most of these then remained for reasonable periods at full duty in the line.

Prevention and Treatment

Prevention.—It will be to the country's advantage if recruiting medical boards have freedom, as I believe they have, to reject or place low in category men likely to become the subjects of effort syndrome. Such would especially be those with similar symptoms in civil life, certainly if because of them they had lost much time at work and been under their doctor or had changed their occupation. Further, weaklings of poor physique unlikely to improve by training, and those obviously of a nervous make-up, can seldom reach the highest grade of service. Nor can those with a persistent high tachycardia. For war purposes a convenient term to cover these cases would be "potential effort syndrome" (or potential E.S.).

If already accepted and serving, a man at his unit showing constant incapacity for prolonged exertion may be allotted a less onerous job in which he will prove useful instead of swelling the number with effort syndrome. It is better to keep him with the unit if at all possible, avoiding this diagnosis. If he is unfitted for the lighter work, or if none is available, the sooner he is discharged the better. The difficulty is, of course, to form a right judgment when there seems to be a studied attempt to evade service by importunity of complaints, especially as shirking in this form may become contagious. Discipline as well as encouragement is required from the medical officer, and a skilful mixture may restore and reinstate the milder cases. The importance of adequate convalescence after general infections or bronchial attacks has already been mentioned.

Treatment in Hospital, Camp, or Special Centre.—Rest in bed is absurdly out of place, and medicine is anathema. Once it is clear that there is no organic disease and the condition is properly classed as effort syndrome, further close examinations are redundant and may be harmful. The period in hospital should be as short as possible, for diminished discipline demoralizes a soldier. The heart is dismissed from the mind of the medical officer and by every means from the mind of the soldier. He is clearly told that the heart—and lungs—are sound, and that he is out of condition. He is not expected to retail his complaints again, but to get into condition and a healthier frame of mind.

Psychological methods of treatment are being tried in this war. They are likely to have much the same measure of success as they have with the common functional ill-health of practice in civil life, though under war conditions and in the mass they will be placed at a disadvantage. Many men who really want to get well and to remain in

the Army are likely to be helped greatly by understanding doctors and especially by those who are experienced in psychotherapy.

Graduated drill under an intelligent and co-operative instructor is needed to promote physical fitness, and is a sound method of reassurance by implication; but games are equally important, and every incentive to recover by suggestion and distraction should be employed. Failure of such treatment will be recognized in men of good will by the production of symptoms and visible signs in the course of such retraining: It is no use taking pulse rates; undue dyspnoea, obvious distress, and abnormal exhaustion are the useful indications. It will be difficult to deal with the shirker. A capable instructor will help greatly in deciding whether further treatment is worth while in particular cases. If not, discharge or lower grading of the genuine incapable is indicated, and the sooner the better if rehabilitation in civil employment is to be accomplished. By such sorting the standard among the progressive group is maintained and encouraged. The ideal result is achieved when a man ceases to complain, willingly carries through his treatment, and acquires a healthy desire to return to and remain with his unit.

CLINICAL INVESTIGATION OF SHOCK

BY

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Now that the battle is raging over home soil, treatment of casualties is simplified by having all the resources of long-established and well-equipped hospitals at our disposal. It is suggested that this advantage be exploited by making and preserving records of cases of shock. Analysis of such case records is a valuable form of clinical research, and a standard shock-record card would assist comparison of results from different methods of treatment. The making of such records would be within the scope of many medical officers in charge of resuscitation wards at E.M.S. and military hospitals and would be a practical supplement to the more detailed work organized by the Medical Research Council Shock Committee.

The advantages to clinical research of recording the pertinent data of cases of shock on a special card were emphasized by Brittain and Latter (1940), and the hope was expressed that a suitable standard card would be produced for use in E.M.S. hospitals. Moreover, apart altogether from research and private case notes, there is a need for some written record of the amount, speed, and time of transfusions, and the extent and rate of improvement in blood pressure and general condition, since such details assist the surgeon in deciding on the best moment to operate and when further restorative measures are required. Such a card has advantages over the case sheet, since it involves less descriptive writing and obviates omissions.

The Resuscitation Records Card

It was with these considerations in mind that the card here reproduced was planned during seven months' experience of keeping case records as O/C Army blood transfusion team. Although work on this card was begun in October, 1939, it has not been published before, as it seemed desirable to remould it after gaining experience of its use and after receiving the help and criticism of a number of authorities. The card may still have imperfections, but it seems best to publish it now in the hope that others may wish to use it.