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NEW YORK

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THE PSYCHONEUROTIC FACTOR IN
THE IRRITABLE HEART
OF SOLDIERS *

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In 1871, Da Costa published his observations "On the Irritable Heart" as seen among soldiers invalided for this malady during the Civil War. During the present war this condition has again become prominent and names such as "disordered action of the heart" (D. A. H.), "effort syndrome," "debility," "neurocirculatory asthenia," etc., are employed to describe the affection or the group of chief symptoms. The class includes all cases which present a well defined syndrome in which certain nervous and circulatory symptoms are associated with increased susceptibility to fatigue and in which no definite pathologic condition can be found to which to ascribe the clinical symptoms. The underlying pathogenic process is still unknown; and when we speak of the psychoneurotic factor in the "irritable heart" of soldiers, we do not imply an immediate causal relationship between the two, or that the symptoms of the two originate in the same way, but rather that possibly both groups may result from some common but as yet unknown cause.

It is probable that at present under the term "irritable heart" are included types of cases which are fundamentally quite different. The prominence of the nervous symptoms in many instances is so striking that

* From the Military Heart Hospital, Colchester, England.

one naturally considers the relationship to the psychoneuroses, just as the circulatory phenomena among certain cases of war psychoneurosis must have led neurologists to wonder where the dividing line is to be drawn; in truth, there is a border land where the two dominions overlap. Some even believe the irritable heart represents merely the cardiac difficulties of soldiers suffering from war neuroses. Again, it is evident that a certain number of patients with irritable heart have suffered from symptoms of the condition long before enlisting, some dating the onset to the formative period or even to childhood. The question whether some cases are not congenital or even hereditary in character also occurs, particularly when dealing with soldiers who belonged to the group called constitutionally asthenic. Then there is the serious and, in the American Army, immediate problem of dealing with recruits with such histories who break down in training.

With these matters in mind we decided to analyze the detailed histories of 100 unselected cases to see whether such an analysis would throw any light on these questions or give definite confirmation to certain impressions which had been gained in the course of daily routine observations. Our study was based on the clinical material in the large Military Heart Hospital at Colchester, which admits almost exclusively soldiers invalidated from the British Expeditionary Force.

For purposes of comparison the same characteristics selected by Capt. Julian M. Wolfsohn¹ in his valuable paper on "The Predisposing Factors of War Psychoneuroses" were utilized, and also the statistics on 100 wounded soldiers used by him as controls. We have taken the liberty of reprinting two of his tables, but have incorporated our observations on cases of irritable heart in a column between those he has published for the psychoneuroses and those for control soldiers. In both tables (1 and 2) it will be seen that the percentage of the various characteristics named are in

1. Wolfsohn, J. M.: The Predisposing Factors of War Psychoneuroses, *THE JOURNAL A. M. A.*, Feb. 2, 1918, p. 303; *Lancet*, London, 1918, **1**, 177.

general highest in the psychoneurotic group, intermediate in the irritable heart group, and lowest in the control group of cases.

FAMILY HISTORY

It must be made perfectly clear that we were investigating the family history of cases of irritable heart for factors considered causal for psychoneuroses. The patients were invalidated for irritable heart only, and the statistics obtained from these are placed in the middle column in both Tables 1 and 2.

A positive family history of one or several of the characteristics selected was obtained in 56 per cent. of cases of irritable heart and in 38 per cent. of the controls; but the contrast between the two classes becomes far more striking when certain of the individual items are compared. Thus with reference to nervousness in the family history, there are 45 per cent. among the irritable heart group and only 15 per cent. among the controls; in regard to insanity and epilepsy there are 23 and 15 per cent., respectively, in the families of cases of irritable heart and none among the controls.

PERSONAL HISTORY

In Table 2, the contrast between cases of irritable heart and the controls is still greater. The percentage of cases with a positive personal history of a psychoneurotic factor is fifty-one among cases of irritable heart, twelve among the controls, and of those with positive family *and* personal history there are 46 per cent.

TABLE 1.—PERCENTAGES OF CHARACTERISTICS NAMED IN FAMILY HISTORY OF PATIENTS SUFFERING FROM (1) NEUROSIS, (2) "IRRITABLE HEART" OF SOLDIERS, AND (3) CONTROLS

	Neurosis Per Cent.	Irritable Heart (Wounded) Per Cent.	Controls Per Cent.
Nervousness	64	45	15
Alcoholism (parents and grandparents) ..	50	15	24
Tetotalers (parents and grandparents) ..	30	15*	16
Irritability of temper	36	27	12
Insanity	34	23	0
Epilepsy	30	15	0
Tuberculosis (immediate family)	12	13	4
Tuberculosis (relatives)	5	15	4
Stigmata	10	17	0
Positive history for one or several of fore- going	74	56	38

* Figure incomplete.

among the former group and only 6 per cent. among the latter. As to the individual items, the predominance of certain characteristics among cases of irritable heart as contrasted with the controls should be especially noted, namely, presence of stigmata, prevalence of previous nervousness, a history of epilepsy or fits, of previous breakdown, of moodiness, and of enuresis. It is well known that sufferers from irritable heart are apt to be teetotalers and are sexually not very active; the latter fact may account for the low percentage (18) of married men in this group as compared with 28 per cent among the controls and 42 per cent. among the psychoneurotics.

TABLE 2.—PERCENTAGES OF CHARACTERISTICS NAMED IN THE PERSONAL HISTORY IN CASES OF (1) NEUROSIS. OF (2) "IRRITABLE HEART" OF SOLDIERS AND OF (3) CONTROLS (I. E., WOUNDED)

	Neurosis Per Cent.	Irritable Heart (Wounded) Per Cent.	Controls Per Cent.
Stigmata	34	12	4
Previous nervousness	66	46	12
Fears	50	31	8
Head injury	38	5	12
Epilepsy and "fits"	8*	5	0
Tobacco (excessive)	8	1	4
Alcohol (excessive)	6	0	16
Alcohol (teetotaler)	48	36	20
Married	42	18	28
Moody	55	27	8
Previous breakdown	2	21	0
Enuresis	12	14	4
Frights in childhood	4	19	0
Excessive religion	6	6	0
Positive personal history	76	51	12
Positive family and personal history.....	70	46	6

* As stated in the text, the data in the neuroses and the controls are reprinted from Captain Wolfsohn's paper; in his figures, however, only epilepsy was considered, whereas we have also included "fits" which may, or may not, have been true epilepsy.

Of the 100 cases analyzed, sixty-one gave a positive family or personal history for psychoneurotic factors. Of these, forty-six gave a positive family and personal history, a group which we will call Group 1 to distinguish it from Group 2, which consists of thirty-nine cases with a negative family and personal history (Table 3). A comparison of other facts in these two large groups, 1 and 2, of cases of irritable heart is shown in Tables 4 and 5. As regards previous occupations in civil life, it is noteworthy that patients in Group 1 followed largely sedentary and light occu-

pations, whereas of those in Group 2 some did light but more did heavy work. In Table 5 it is shown that the average duration of foreign service is six months less among Group 1 than in Group 2; but the real difference between the two types is seen in a comparison of the *character* of the military service rendered; only four out of forty-six in Group 1 did

TABLE 3.—PERCENTAGES OF CASES OF IRRITABLE HEART OF SOLDIERS SHOWING POSITIVE FACTORS, IN THE FAMILY OR PERSONAL HISTORY, PREDISPOSING TO PSYCHONEUROSIS

	—Neurologic History—		Percentage
	Family	Personal	
Group 1	+	+	46
Group 2	—	—	39
Group 1A	+	—	10
Group 1B	—	+	5

full duty, as contrasted with thirty-three out of thirty-nine in Group 2.

CHARACTER OF SERVICE

The character of service of each of the 100 men is also given in abstract in Table 6, and it is very evident that the patients in Group 1 from a military point of view gave such a poor account of themselves as a whole as to make one doubt whether it was worth the time and expense devoted to them in training. On the other hand, those in Group 2 certainly did at least the

TABLE 4.—OCCUPATION

	Sedentary	Light	Heavy
Personal and family history positive (Group 1).	10	27	9
Personal and family history negative (Group 2)	2	17	20

military duty of an average soldier, and many of them gave most valuable and prolonged service. *In such patients, invalidated for irritable heart, as have neuro-psychic factors in their family and personal anamnesis, the value of the military service rendered in the past is found to be negligible (Table 6).*

THE CAUSES OF INVALIDING

The cause of invaliding is given for each of the 100 cases in Table 6, and it is worthy of note that among the cases in Group 1 there is frequently, in fact, in twenty out of forty-six cases, nothing definite;

on the other hand, in Group 2 there is more frequently a definite precipitating cause, such as an infection like trench fever or dysentery, prolonged service, gassing or shell explosion.

CONSTITUTIONAL PHYSICAL ASTHENIA

The sharp contrast between the two groups goes further than differences in their family and personal histories as regards neuropsychic factors, occupations in civil life, or duration and character of foreign service. A history of constitutional asthenia was obtained in almost 70 per cent. of Group 1 cases and in only 12.8 per cent. of Group 2.

TABLE 5.—AVERAGE AGE AND DURATION AND CHARACTER OF SERVICE

	Group 1 (46 cases)	Group 2 (39 cases)
Average age	27 years	25 years
Duration of foreign service.....	13 months	19 months
Number of patients that did full duty.....	4	33
Number of patients that had no foreign service	9	2

By the rather vague term "constitutional asthenia,"² is meant a relative inferiority or an anomaly in the assemblage of inherent characteristics, both functional and morphologic, which go to make up the organism. Among the constitutionally asthenic we include those who have always been short of breath, have been unable to play the more strenuous games or keep up physically with the average of their fellows, have fainted or become dizzy easily, have blushed readily, perspired too profusely, and have suffered from cold extremities. There appear to be two types of such individuals, first, those who are weak and poorly built, or may have a "habitus," and second, those who to all appearances are muscular, strong and robust, and yet for some unknown cause have had symptoms such as dyspnea on exertion from youth up.

One may also include under this term patients who have a habitus, such as the narrow chested or splanchnoptotic, those who have given evidence of a diathesis such as the hemorrhagic, the exudative, the

2. In the British Army "constitutional" is a term used on certain documents of the Medical Board as an equivalent of the term "pre-enlistment"; a condition is termed constitutional if it existed before enlistment.

TABLE 6.—CHARACTER OF SERVICE AND CAUSE OF INVALIDING
GROUP 1, PATIENTS HAVING A POSITIVE FAMILY AND PERSONAL HISTORY FOR PSYCHONEUROTIC FACTORS

Case No.	Age	Occupation	Total Military Service, Months	Foreign Service, Months	Character of Service	Cause of Invaliding
2	28	Miner (light)	6	0	Never "carried on"	None definite
6	19	Detective	19	13	Light duty	Pneumonia
8	42	Light laborer	9	9	Hard labor, but frequently ill	Age and hard labor
11	32	Light laborer	21	18	In hospital most of the time, light fatigue duties	Wound and trench fever
12	25	Plumber	42	35	Used as barb wrier; had symptoms greater part of time, used in reserve	Burial
13	40	Butcher	24	14	Carried on with difficulty, doing moderately heavy work	Trench fever
14	33	Traction engine driver	19	13	Light jobs in hospital	Dazed by a shell
17	42	Packer	38	25	In trenches for 3 months, but could not stick to it, then in O. M. S.'s office	None definite
19	29	Machinist	37	29	In trenches for 2 months, permanent base for 1 year	Trench fever
25	23	Railroad engineer	9	5	No service except training, greater part of time in hospital	Shell fire
26	35	Miner (light)	14	10	In trenches 10 days, rest of time light fatigues in hospital	Gassing
27	20	Electrical engineer	10	0	Could not stand training
28	26	Clerk	19	0	Hospital a better part of the time	None definite
29	26	Shop assistant	42	42	Batman	None definite
32	32	Fruit merchant	9	9	Sorting mail, job too heavy	None definite
33	19	Butcher	8	9 days	No service	None definite
34	29	Shoe hand	42	37	Batman; transport driver; occasionally in line; blown up by a shell; in hospital since September, 1917	Shell shock
35	27	Grocer	42	5	Bomb instructor for 3 years in England; could not carry on in trenches	Burial and trench fever
39	21	Chemical packer	12	4	1 week's service with difficulty; in hospital since	Slight burial
41	26	Farmer	21	0	General weakness
44	33	Foreman	10	2	In trenches 10 days and fainted	None definite
50	29	Cricketer bat maker	42	39	A lancer; carried on with difficulty, since November, 1915	Prolonged service
59	21	Sheet iron worker	11	8	Light duty; frequently sick	None definite
62	26	Coach painter	22	0	Never able to do full drills	None definite
63	23	Fitter	15	12	Light work with difficulty; in hospital frequently	Slight gassing
67	23	Coachman	16	6	Light duty; frequently sick	None definite
68	25	Clerk	42	19	Moderate duty; invalided to England once previously; frequently sick	None definite
70	29	Clerk	24	6	Clerical work and light fatigues	Rheumatic fever
71	20	Miner (light)	54	12	Interrupted partial duty	Shell explosion
72	31	Tailor's cutter	16	0	In cycling corps; weight too heavy; in hospital greater part of time	Influenza
73	22	Brakeman	13	10	Brakeman; had symptoms all the time	Rheumatic fever
74	24	Plate layer	33	11	Active service	Wound and gassing
76	23	Fitter and turner	38	8	Light duty	Malaria
77	33	Iron driller	24	12	In trenches a few weeks; caught cold; sent to England; back to trenches for 2 weeks; in hospital since	Septic poisoning
78	21	Barman	15	13	Never did his share; in hospital frequently	None definite
79	23	Shop assistant	33	25	In line 6 months with difficulty; clerical work and hospital greater part of time	Gassing
80	23	Mechanic	29	0	Cavalry for 2 years, then cycling corps; work too heavy	None definite
81	24	Fitter and turner	34	24	Operated on for hernia after 1 month; used in reserve on light jobs	None definite
84	26	Boxmaker	42	34	At guns, but could not stick it because of nerves	Shell fire
86	23	Clerk	34	25	Carried on as a pioneer for 2 years with difficulty; mates always helped him	None definite
87	29	Gardner	11	11	Never able to do the harder jobs; stuck it as long as he could	None definite
91	35	Barber	15	8	Tried hard work for 1 month but unable to do it; in hospital and doing very light fatigue work since	Rheumatic fever at 16
94	38	Fireman	27	25	Fairly hard service	Rheumatic fever as child
96	19	Clerk	20	1	Only the lightest kind of work	None definite
97	18	Clerk	5	0	Sick most of the time	None definite
99	26	Bell boy	16	1	In hospital for fainting 5 days after arrival	None definite

GROUP 2, PATIENTS HAVING A NEGATIVE FAMILY AND PERSONAL HISTORY FOR PSYCHONEUROTIC FACTORS

Case No.	Age	Occupation	Total Military Service, Months	Foreign Service, Months	Character of Service	Cause of Invaliding
3	22	Grocer's assistant	39	13	Non-com. officer; moderately light work	Shell concussion
4	20	Civil servant	20	9	No service except light fatigues and in hospital	None definite
5	28	Laborer	20	12	Very active service	Gassing
7	23	Golfer	53	29	Very active service	Rheumatic fever and service
15	23	Fitter and turner	15	0	Full infantry training	Psychic disorder
18	25	Warehouse man	9	4	2½ months' very active service	Concussion
20	21	Joiner	22	19	Active service	Burial
23	25	Porter	42	35	Active service	Prolonged service
24	21	Porter	28	21	Active service	None definite
30	26	Carter	42	24	Full service	None definite
31	28	Farmer	22	5	Little service	Dazed by a shell
36	19	Upholsterer	20	6	Full duty	Trench fever
37	28	Seaman	42	42	Full service	Prolonged service
38	25	Cutter	42	42	Full service	Prolonged service
40	32	Light laborer	12	0	Light duty	None definite
42	24	Miner	19	19	Very active service	Hard work
47	19	Porter	40	40	Active service	Explosion
49	45	Cutter	40	40	Moderate light work as transport driver	Bronchitis
51	21	Fruiterer	30	10	Full duty	Gassing
52	20	Farm laborer	27	12	Full service	Wounded
53	43	Timberman	28	28	Hard labor	Age and prolonged service
54	24	Boot and shoe clicker	24	4	Active service	Gassing
55	30	Electrical engineer	36	36	Active service	Prolonged service
56	27	Machine worker	42	42	Full service	Trench fever
57	30	Electrician	41	41	Active service	Prolonged service
58	23	Storekeeper	31	6	Active service	Pyrexia of unknown origin
60	19	Laundryman	14	7	Light duty	Influenza
64	21	Laborer	36	18	Full duty	Burial
65	21	Laborer	42	9	Full duty	Trench fever
66	24	Carter	42	42	Very active service	Pyrexia of unknown origin
69	23	Fishmonger	34	34	Cook; little real service	None definite
75	21	Machinist	34	21	Full service for 6 months, then 3 attacks of trench fever	Trench fever
82	27	Salesman	31	18	Fairly active service	None definite
85	25	Porter	42	23	Active service for almost 2 years	Wound and burial
89	20	Light laborer	5	3	Employment Company; moderately light work	Rheumatic fever when 18
90	21	Miner (light)	33	21	Active service	Rheumatic fever when 12; pyrexia of unknown origin
93	23	Clerk	8	1	1 month, very light service	Rheumatic fever 2 years before
98	25	Farmer	22	14	5 months active service and since then symptoms	Dysentery
100	33	Clerk	18	14	Full duty until 6 months ago	Injury to chest by shell explosion

GROUP 1 A, PATIENTS HAVING A POSITIVE FAMILY HISTORY, BUT NEGATIVE PERSONAL HISTORY FOR PSYCHONEUROTIC FACTORS

Case No.	Age	Occupation	Total Military Service, Months	Foreign Service, Months	Character of Service	Cause of Invaliding
10	27	Commercial traveler	20	13	Hard for 5 mos., then pyrexia of unknown origin and hospital for 8 months	Psychic trauma and pyrexia of unknown origin
22	23	Window painter	5	2	Light duty	Rheumatic fever 3 years before
43	32	Boot manufacturer	1	4	Light duty	Shell explosion
21	25	Calico cutter	14	11	Light duty in veterinary corps	None definite
1	41	Miner	40	24	Very active service	Wounded and burial
9	27	Farmer	42	0	Hemophilia
45	32	Engineer; laborer	42	40	Active service	Prolonged service and shell fire
46	37	Carter	17	7	Active service	Trench fever
61	19	School boy	42	9	Light duty	Age and trench fever

GROUP 1 B, PATIENTS HAVING NEGATIVE FAMILY HISTORY, BUT POSITIVE PERSONAL HISTORY FOR PSYCHONEUROTIC FACTORS

Case No.	Age	Occupation	Total Military Service, Months	Foreign Service, Months	Character of Service	Cause of Invaliding
16	22	Clerk	11	0	Moderately light training	Psychic shock
48	24	Civil servant	33	14	2 mos. active service, then light duty and hospital after	Burial
83	22	Clerk	39	3	3 mos. duty at Dardanelles; since then hospital and military police work	Dysentery
88	18	Chauffeur	8	0	Never able to do full training	Psychic shock
92	24	Laborer	40	24	Active duty with difficulty; invalided home once permanently	None definite

lymphatic or the spasmophilic, and those having a dyscrasia, or belonging to certain types such as the vagotonic, angiospastic, erethic, feminine, eunuchoid, etc.; or those showing definite evidence of disturbance of the endocrine organs. Attention has been directed for many years to this whole question of constitution by F. Kraus, and it is impossible to enter into the subject here; but it must be emphasized that apart from neuropsychic factors, there is a constitutional tendency in certain individuals which predisposes them to the development of the irritable heart syndrome. Moreover, such a history of constitutional asthenia was present in 70 per cent. of Group 1 cases and in only 12.8 per cent. of Group 2. And it is a persistence of this condition which is meant when the cause of invaliding in Table 6 is indicated as "nothing definite."

JUVENILE OR DEVELOPMENTAL VASONEUROTICS

From a study of the personal histories, it is believed that many patients with the irritable heart of soldiers are the mature individuals who during their developmental period presented vasoneurotic symptoms. Of the forty-six patients in Group 1, thirty-two or 70 per cent. showed symptoms of constitutional physical asthenia before the age of 17. Of these, thirteen had symptoms as long as they could remember. Of the remaining nineteen, the age at which symptoms of constitutional weakness first manifested themselves ranged from 8 to 16, and averaged 11.8 years for those who could recall approximately their age when the symptom or symptoms appeared. (Two other patients dated the appearance of their symptoms to their twenty-second and twenty-third year, respectively; but as the symptoms appeared so late, it is not certain they belong to the same group.)

Apparently hitherto no attention has been paid to a very important fact, that a syndrome identical with that of irritable heart occurs not infrequently in children,³ especially associated with orthostatic albuminuria.⁴ These symptoms usually arise in children at the school age, from 8 to 14, and are "chiefly those

3. Martius: *Kong. f. Inn. Med.*, 1899, **3**, 41.

4. Bass, M. H., and Wessler, H.: *Heart Size and Heart Function in Children Showing Orthostatic Albuminuria: An Orthodiagraphic Study*, *Arch. Int. Med.*, April, 1913, pp. 403-417. This paper gives the references to the literature on the subject.

referable to the cardiovascular system, namely, dyspnea on exertion, palpitation, precordial pain, headache, fainting, hypersusceptibility to cold." To quote Bass and Wessler again:

In spite of the absence of any demonstrable increase in the size of the heart, all of these children nevertheless had definite symptoms. . . . Twelve of the fifteen had definite signs of abnormal function, five had booming first sound, three had apical systolic murmurs; four had marked accentuation of the second pulmonic sound; four showed apical signs of marked overaction, and four showed increased heart dulness to the left.

In the illustrative case history that follows this description, they note "hands cold and cyanotic, marked dermatographia, Chvostek's sign positive." Moreover, orthodiagraphic study of these cases showed that although the hearts do not dilate after exercise, a considerable number of them fail to become smaller under these conditions. In all these particulars, then, these cases formerly called "dilative weakness,"³ resemble the irritable heart.⁵ In fact, the symptomatology of the juvenile cases is identical with the syndrome as seen in soldiers. It seems highly probable to us, therefore, that the adult patients with irritable heart who give a previous history of similar symptoms at the prepuberty age, or as far back as they can recall, have been children who are then recognizable as suffering from "vasoneurosis," "dilative weakness," etc. Indeed, we have been able to follow in civil practice one boy with a positive family history, whose symptoms began with cyclic vomiting in infancy and childhood, who had dyspnea, palpitation and occasionally pain on walking up-hill in his teens, and at 18 years of age presented the characteristic clinical picture of neuro-circulatory asthenia with overacting heart, very diffuse apex beat, loud systolic murmur, etc.

DIFFERENCE IN SYMPTOMATOLOGY OF THE TWO GROUPS

In comparing the symptoms in the two groups of cases, that is, those with and those without psychoneurotic factors in their family and personal histories,

5. We examined thirty unselected cases of "irritable heart" and found one with orthostatic albuminuria. Orthostatic albuminuria usually disappears at puberty, but may remain in adult life. We have observed Chvostek's sign repeatedly among soldiers suffering from irritable heart.

it is noteworthy that in general, soldiers in Group 1 complain almost invariably of chest pain among other symptoms; (indeed, the men are apt to "stick it" until pain develops; then they become alarmed and report sick). Patients of Group 2 rarely complain of chest pain, but suffer more from exhaustion and weakness; they are "done up," to use their own expression. One case may be cited belonging to Group 2 which illustrates that an acute infection may be the cause of the irritable heart, that these symptoms may then disappear and leave simply exhaustion. The patient referred to broke down after prolonged service and trench fever with breathlessness which disappeared after a fortnight, leaving him with weakness, exhaustion and nervousness, but no dyspnea or pain. The post-infectious cases of "irritable heart" are more apt to present exhaustion symptoms and only exceptionally pectoral pain.

There is perhaps a certain parallelism between these two groups of "irritable heart," and cases of war neuroses. If we understood Dr. Rivers correctly, certain cases of shell shock result in repression neurosis, the *anxiety* neurosis, while those resulting from exhaustion or infection manifest themselves as *exhaustion* neurosis (neurasthenia). Similarly in a general way, among patients with irritable heart there are those belonging to the constitutional group, who suffer from chest pain, etc., and those who belong to the exhaustion or the postinfectious group who have fatigue symptoms, but rarely much pain.

SUMMARY

As stated at the outset, we do not know the fundamental pathology of the syndrome known as the "irritable heart" of soldiers. It is almost certainly not a clinical entity. In general, there are two large groups of cases whether investigated from the standpoint of neuropsychic factors in the family and previous history, or from that of preenlistment and constitutional symptoms. In half the cases one observes, there is a positive family and previous history of factors considered predisposing to psychoneuroses, and in almost 70 per cent. of these there is a history of constitutional asthenia. It is this particular group (1) that inclines one to the view that an irritable weakness of the whole nervous system, including the innervation of the entire

circulatory system, may account for the varying neuro-psychosomatic symptoms.

There are all the remaining cases to be considered, however. It may well be that the resistance of individuals in Group 2 was perfectly normal, but that they were subjected to a strain or infection, sufficiently prolonged or intense to exhaust their reserve. The normal individuals, when they do break down, seem to present symptoms of exhaustion; the relatively inferior individuals show both excitation and exhaustion.

The burden to the Army of cases of irritable heart may be lightened by the early recognition of cases belonging to Group 1. As yet we do not know how many individuals having similar family and previous histories for neuropsychic factors (with or without preenlistment symptoms referred to the heart) give valuable military service and are not invalided. Until such statistics are available, it is practicable to recommend that only special boards be guided in the disposition of recruits by such anamnestic data.

In a type case of Group 1, the patient has a positive family and personal history for neuropsychic factors: in civil life followed a sedentary or light employment, tolerated about one year of foreign service, but that usually at light duty. He is apt to break down finally, not from a definite precipitating cause, but because he is fundamentally relatively inferior. He almost invariably complains of chest pain among his other symptoms.

In a type case of Group 2, the patient has a negative family and personal history, in civil life followed some occupation involving hard labor, stood about one and one-half years of foreign service, and that usually at full duty. He is more apt to give a history of a definite precipitating cause, such as prolonged service or acute infection, which invalided him. He complains more of exhaustion and weakness, and only rarely of chest pain.

Individuals of Group 1 who were invalided gave a history indicating that the value of their military service was almost negligible, while before breaking down many of those in Group 2 gave unquestionably valuable service.

